Climate mobility-associated loss and damage

Thematic Paper 8

Climate (im)mobility research in the Pacific

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Key messages for policymakers

This thematic paper is based on research with 891 men, women, and young people living in 17 communities across seven Pacific countries. Three of the 17 communities included transnational community members in Aotearoa New Zealand and Niue. The field research took place in 2023 and involved 30 mostly Pacific scholars and researchers who spoke the languages from the communities they worked in. From these conversations we can identify the following:

- **All communities** identify noneconomic loss and damage (**NELD) associated with climate change-related mobility or immobility.**
- Tangible and intangible losses and damages are being experienced. The loss of cultural knowledge, language, identity, and practices is of particularly deep concern.
- In general, atoll communities are reluctant to move but the strength of this reluctance varies between **generations**.
- Even when relocation is to places with relational ties, the distress related to potential migration is strong, underscoring the importance of community attachments to place and the **anticipated and actual loss** experienced.
- All **informally relocated communities** are also facing further loss and damage with possible **relocation** from their adopted locations due to climate change. These losses are an example of compounding generational losses that occur because of continuous im/mobility decision making.
- **Environmentally displaced communities** have undertaken community and government-led relocations with mixed outcomes. As communities of survivors, enduring memories and trauma of abruptly abandoning their homes are conveyed to next generations.
- **Gendered perceptions** of loss and damage and their influence on climate mobility decisions are significant and often overlooked. Retaining women's cultural practices and social cohesion present new challenges in new locations.

- Perspectives from **diverse gender and sexual orientation communities** continue to be underrepresented and overlooked. There is significant risk of being marginalised or forgotten in climate change and disaster response and recovery efforts.
- Understanding **generational perceptions** of loss and damage means engaging inclusively with all generations, elders, young people, and community leaders to ensure policies and interventions are sensitive to the aspirations, needs, and values of all generations.
- **Young people's perspectives** show there is common understanding that losses are due to climate change, not of their own making. Youth from communities already facing increasing threats to the habitability of their place appear more cognisant of what is at stake. Young people also identify other challenges and highlight the need for good leadership. They also express an optimistic outlook to having a safe place in the future.
- **Older generations** quietly observe the deterioration of their physical environment and loss of land and cultural sites. Elders also identify that the losses of **Indigenous and local knowledge** and **losses to biodiversity** influence mobility decisions. Older generations worry for their young people and their futures.
- Categorising loss and damage as either economic or NELD underestimates the sense of loss for many Pacific communities.
- In Pacific terms, land and its enlivening waters provide deep cultural and spiritual significance because **people and land mutually constitute each other**. There cannot be one without the other.
- Experiencing NELD might prompt communities and members to relocate as a solution for coping or survival. Alternatively, moving can bring about its own set of NELD such as disruption to community cohesion and loss of cultural identity. Therefore, it is important that policy opportunities acknowledge the multidirectional nature of the relationship between NELD and climate change im/mobility.

1. Introduction

> *We will lose the essence of every practice that we have that is based on the oile [village] – tawa, yolonga, wua and pule. With the loss of everything that is related to our identity and who we are, we will be lost. (Pukapuka, Cook Islands)*

In the Pacific, people, land, ocean, and spirit are viewed as inseparable. The environment is not merely a physical space but a foundational source of identity, spirituality, and sustenance. The relationship of people and the environment in the context of Indigenous and local communities is important. Climate change disrupts this intricate relationship, leading to profound losses in cultural heritage, traditional knowledge and practices, and the spiritual connection to ancestral lands and waters. The harm experienced by people and their environments due to climate change extends beyond physical and material impacts, encompassing cultural, spiritual, and socioeconomic dimensions.

The notion of Pacific climate mobility encompasses a complex interplay of interconnected environmental, social, economic, and cultural factors. While environmental factors such as the impacts of climate change, including extreme heat and rain, intensifying weather events, increasing sea-level rise, unpredictable rain, flooding, and inundation, play a key role in shaping livelihoods and identities, they rarely act as the sole driver of decisions to move. Instead, decisions are influenced by a dynamic range of considerations. These considerations should be an intrinsic part of discussions on the loss and damage associated with climate change. Categorising loss and damage as either economic or noneconomic loss and damage (NELD), as is done in much scholarship and policy, is to crudely underestimate the sense of loss for many Pacific communities. Instead of simply separating all climate change loss and damage into economic and noneconomic categories, there should be one climate im/mobility-associated loss and damage. Land and its enlivening waters are not just physical coordinates on a map – they provide deep cultural and spiritual significance because people and land mutually constitute each other. There cannot be one without the other. Being forced to leave ancestral lands because of sudden- or slow-onset climate-related environmental impacts leads to a loss of cultural identity and contributes to psychological distress and trauma. This can be evident over many generations in both

latent and explicit ways. Having to live on other people's ancestral lands also requires unsettling cultural and spiritual adjustments for relocated people and their hosts.

Addressing these complex challenges in estimating and responding to loss and damage caused by climate change in the Pacific requires a comprehensive and multidimensional approach that firmly centres the needs and rights of Pacific communities. This approach will ensure more effective responses but also enhances international cooperation and solidarity. Some elements of this approach include using tools like community-based assessments such as enhanced integrated vulnerability assessment and holistic assessments.

International support for these practices to be tailored to Pacific communities would be a fair and just response; however, 'loss and damage' are contentious issues internationally. Debates pivot around how to place monetary values on noneconomic losses. Understanding climate im/mobility associated loss and damage requires a fundamental understanding, in Pacific terms, of sense of place. This is because the attachment to place is more than having a sense of attachment to any place. Rather, in relational terms, connection to place refers to essential cultural, spiritual, multigenerationally layered bonds to place across time and space. The loss of cultural alignment, spiritual balance, and relational ties is immensely profound. The critical resources that Pacific communities depend on for their lives and livelihoods are prominently reported as loss of biodiversity, including coral reefs, mangroves, marine life, and land-based ecosystems; but cultural and spiritual resources are equally critical, such as the ceremonies and rituals, ancestral practices and traditions, languages, and community elders and spiritual leaders. Documenting the ongoing irreversible negative impacts of climate change that communities have encountered is important for quantifying and qualifying loss and damage in Pacific communities.

Climate mobility has also been considered a response to loss and damage when places, particularly low-lying coastal areas, are regularly inundated and become uninhabitable. If im/mobility actions are not carefully planned and managed, further losses can arise, especially around deeply rooted cultural and spiritual attachments to 'place' and land. From an individual perspective, when one's places are considered an extension of 'self' and identity, as in the Pacific, the effects of loss, disconnect, and dissonance due to

climate-related mobility can be ameliorated by supporting cohesive transnational communities. But this requires new financial resources.

1.1 Background

From a climate mobilities perspective, loss and damage related to climate change are linked to people's ability to adjust to the adverse effects of climate variability and change in the places they occupy and may need to move from. Losses are generally understood to be irreversible, and damages can be restored or lessened (Kreienkamp & Vanhala, 2017). The differentiated impacts of climate change exacerbate existing inequities with greater losses accruing to vulnerable communities where those least responsible for climate change are most at risk (Calliari et al., 2020; Calliari & Vanhala, 2022; McNamara & Jackson, 2019).

The United Nations Framework for the Convention on Climate Change established the Warsaw International Mechanism for Loss and Damage (WIM) in 2013 to address the challenges posed by loss and damage associated with the impacts of climate change. The WIM was established to focus on understanding and responding to the adverse effects of climate change that cannot be effectively addressed by adaptation and mitigation alone. A key task was to assess how present and future climate change losses could be conceptualised and addressed (Cunsolo & Ellis, 2018). A new Loss and Damage Fund is currently being designed. Its scope will include human mobility, which means that funds will be available to address climate change associated human mobility loss and damage (Pope, 2024; United Nations Framework Convention on Climate Change, 2023).

At a regional level, Pacific leaders endorsed the legally nonbinding Pacific Regional Framework on Climate Mobility at the Leaders Meeting held in November 2023 (Pacific Islands Forum, 2023). The framework emphasises the importance of "ensuring rights based and people-centred movement in the context of climate change" (Pacific Islands Forum, 2023, p. 2). The recognition within the strategic context that "movement away from home can result from, be a form of, and cause loss and damage of an economic and non-economic nature" is significant for understanding and addressing climate-related

mobility in the Pacific for current and future generations (Pacific Islands Forum, 2023, p. 1).

As the international and regional community grapples with the complexities of loss and damage, there is a growing recognition of the need for new thinking, understanding, and knowledge to inform robust policy interventions and strategies. A few small island developing states' governments have begun outlining actions or policies that acknowledge NELD related to climate-related mobilities (Thomas & Benjamin, 2018). For example, the government of Vanuatu developed a climate change and resettlement policy, with options for resettlement, that identified other 'losses' beyond the material impacts of climate change and displacement (McDonnell, 2021). As admirable as this plan is, the high proportion of land in customary ownership presents significant challenges to implementing such policies.

Understanding community perspectives on losses associated with climate mobility involves careful probing for various kinds of losses and how they influence their decisions to move or not. These perspectives are also moderated by gendered and generational relations.

NELDs are the losses and damages that cannot sensibly be reduced to economic terms. These include poor health, loss of life, loss of mobility, loss of cultural heritage, loss of Indigenous/local knowledge systems, loss of connections with ancestral land and places of belonging, and loss of biodiversity (McDonnell, 2021; Tschakert et al., 2019). These are issues of ethics and justice (Tschakert et al., 2019) and are increasingly documented in terms of human im/mobility and the loss of territory.

Informed by our fieldwork, *"for every tangible loss there is an associated intangible loss"*(Bani at our sensemaking workshop, Nov. 2023), intangible losses such as loss of culture, identity, and sense of place, and grief and anxiety due to environmental losses, are also associated with climate mobility (Newport et al., 2023; Tiatia et al., 2022). Increasingly, attention is being given to psychological and emotional losses, with conditions of ecological grief and solastalgia. As opposed to nostalgia, solastalgia is the distress produced by environmental change impacting people while they are directly connected to their home environment (Albrecht et al., 2007). However, caution is advised

as to the extent to which these concepts are useful in the Indigenous and local context of mental health and wellbeing in the Pacific (Tiatia-Seath et al., 2020; Tupou et al., 2023).

Nevertheless, assessment of the intangible aspects of climate mobility-associated loss and damage and costs is needed as they tend to be underemphasised or overlooked in climate policy (Cunsolo & Ellis, 2018). For instance, not explicitly mentioning grief "due to ecological losses" means people experiencing climate-related grief are not fully compensated (Cunsolo & Ellis, 2018). Addressing climate mobility associated loss to minimise the impact of loss on people requires holistic and community-centred approaches that recognise the interconnectedness of land, culture, identity, and wellbeing. As expressed by a study participant: *"loss of traditional ways of living, cultural heritage and biodiversity. In the Pacific Islands context, this could simply mean the loss of one's identity."* These important interlinked sociocultural, spiritual, and environmental factors, bound up in Pacific Islander identity, make NELD in the Pacific Islands difficult to measure, market, trade, or quantify using traditional economic metrics (McNamara, Westoby, & Chandra, 2021).

In this paper, we limit the scope of analysis to focus on the NELD associated with climate mobility. We present research findings drawn from community perspectives and past and present experiences of NELD due to different forms of climate mobility. McNamara, Westoby, and Chandra (2021) provide a useful typology of eight interconnected core dimensions of NELD: "a) health and wellbeing, b) ways of being, c) future ways of being, d) cultural sites and sacred places, e) Indigenous and local knowledge, f) life sustaining tools, g) biodiversity and ecosystem services, and h) connection to land and sea" (p. 1). We work with these dimensions in analysing data arising from our research activities. We examine the types of NELD associated with climate mobility from 17 communities and present findings and policy implications of the risks and losses associated with staying in place, informal and voluntary relocation, and environmental displacement.

2. Methodology

Our research made use of key informant discussions, walking-the-land conversations, community workshops, and observations to gather information from 17 communities across seven countries – the Cook Islands, Kiribati, Niue, Papua New Guinea, Solomon

Islands, Tokelau, and Tuvalu. The University of Auckland research was codesigned to generate knowledge using formal and informal Indigenous qualitative and quantitative social science methods. For each country, the research approach was informed by methodological contributions from Indigenous scholars. Research fieldwork guidelines were developed for each country to ensure consistency across countries but also to allow for inputs from Indigenous researchers. A key feature of the study design was to engage experienced and emerging Indigenous researchers fluent in the local languages of the sites in which we are working. In some instances, the preferred language of communication was English or a mix of English and the local language. The University of Auckland research leadership team worked with in-country researchers and research assistants explaining, training, and supporting the fieldwork.

Community availability guided the timing of the fieldwork. This meant modifying field visits for reasons that ranged from community unavailability due to bereavements or other activities, delays with research permits, risk of conflict in surrounding areas, availability of transport including flights and shipping schedules delayed due to technical/mechanical issues, and researcher availability due to illness or other competing work priorities.

Gendered and generational social relations were covered in all communities. However, the research team met some social and cultural barriers to engaging with some social groups, including gender-diverse and nonbinary people, and people living with disabilities.

3. Analytical framework

Informed by the findings from 17 communities and drawing on various typologies of mobility in the Pacific, our analytical framework is based on four broad mobility types and five geographic settlement types. Within this framework, we can cluster the 17 communities by their current geographic state (Table 1). A temporal dimension provides another axis of analysis that is consistent with our generational approach. For the sake of clarity, it is not explicitly depicted here, but it was implicit in our research approach, emerged in community views, and was consistent with our Indigenous Pacific analytical approach.

We explore these mobility types against five different types of location (atolls, coastal low-lying islands, coastal locations on high islands; upland or inland communities; and highlands) and four mobility types (staying in place, voluntary relocation, informal relocation, and environmental displacement) (see Table 1).

Table 1: Typologies of mobility and settlement types as of March 2023

Mobilities / Settlements	Staying in place	Voluntary relocation	Informal relocation	Environmental displacement
Atolls	Atafu, Nukunonu, Fakaofo St. John, Betio Funafuti Niutao Pukapuka	Takaeang, Aranuka		
Coastal low-lying islands	Bareho			
Coastal settlements on high islands	Vaimaanga	Ambu	Lord Howe Settlement Red Beach	West Coast Communities
Upland or inland		Vaiea		Aruligo Matupit
Highlands	Managalas Papae/Kolosulu			

The mobility types outlined in Table 1 are categories that build on existing mobility literature (Campbell, 2022) and are grounded in fieldwork with each community:

- **Staying in place**: Staying in place, in situ, is a state of relative immobility but it includes day-to-day movements to and from work, school, livelihoods, fishing grounds, and agricultural sites. It also incorporates temporary internal and external migration of individuals, family groups, and community groupings for work, education, and health/wellbeing purposes. The concepts of 'stay or go,' 'stay and go,' and 'go to stay' are expressed in various languages. This also includes the voluntary and involuntary nature of 'staying in place' where communities and/or groups of community choose to stay in place or choose to go but, for various reasons at times, they are unable to move. These reasons include prioritising family obligations 'at home,' not having the money to travel, or transportation not being available. Most of the atoll communities are categorised as staying in place

and most of them have ‘origin stories’ or living memory stories that bind them emotionally to the place.

- **Voluntary relocation**: This mobility type is based on community histories of planned relocation. Planned relocation includes both systematic relocation as a formal process involving national governments and local-level government or traditional governance structures. Ambu, Solomon Islands, and Takaeang, Aranuka, Kiribati, are examples of internal voluntary relocation, while Vaiea, Niue, is an example of Pacific–Pacific planned relocation of people from the Niutao island in Tuvalu to Niue. The current community in Ambu came about because of the establishment of a mission-based community of people from many places.
- **Informal relocation:** This mobility type is characterised as community relocation that is initiated and led by communities themselves without assistance from national governments. Lord Howe and Red Beach settlements in Solomon Islands, are an example of community-led protracted relocation where, over time, communities from atolls have relocated to sites in the capital city of Honiara that they secured from traditional landowners.
- **Environmental displacement:** This mobility type is also referred to as forced relocation when communities have been permanently relocated due to environmental disruption, either protracted displacement or disruption: disasters due to adverse environmental events. West Coast Communities, Niue, are an example of displacement due to an environmental disaster; they are now located on the upper terrace in Niue because of Cyclone Heta in 2003.

The integration of secondary data analysis ensures a broader context, drawing upon existing research and insights. This foundation enriches our understanding of the regional dynamics and global implications of environmental vulnerabilities. Complementing this, the in-depth fieldwork conducted with diverse communities, as demonstrated by our typologies across the Pacific, directly captures the lived experiences, concerns, and aspirations of communities. By involving these diverse communities that encompass a wide array of contextual factors, we acknowledge the unique challenges and strategies across the region.

Our analysis bridges the gap between theoretical debates and the practical realities faced by Pacific communities. It also provides evidence for policymakers that is more granular and richer, and co-produced, and attends to differences and nuances, so will ultimately result in better policy design, delivery, and outcomes. The narratives and insights gathered during fieldwork and through various sensemaking processes amplify Pacific voices often absent in broader discussions. By incorporating these authentic perspectives, our analysis seeks to strengthen the foundation for informed policymaking, academic discourse, and international collaboration on addressing environmental vulnerabilities in the Pacific region.

3.1 Community climate mobility-associated loss and damage

We introduce a NELD framing to discern the interplay between geographical settlement patterns, mobility types, and the impacts of loss and damage on communities. Our objective is to investigate variations in NELD across different climate mobility contexts. This approach aligns with the localised Indigenous conversational methodologies employed in our community research, diverging from the online questionnaire methods utilised by McNamara, Westoby, Clissold & Chandra in 2021. The table below provides a synthesis of NELD pertaining to climate-induced mobility categorised by settlement and mobility types. It's important to note that not all communities reported NELD across every dimension.

Table 2: Community perceptions of NELD as at December 2023

Settlement	Mobility[1]	NELD interconnected dimensions							
		Health and wellbeing	Ways of being	Future ways of being	Cultural sites and sacred places	Indigenous and local knowledge	Life-sustaining tools	Biodiversity and ecosystem services	Connection to land and sea
Atolls	SIP	St. John Funafuti Pukapuka	Pukapuka Atafu	Atafu	Pukapuka Niutao	Pukapuka Funafuti Atafu	Pukapuka	Niutao Funafuti St. John	Atafu Pukapuka
	VR	Takaeang	Takaeang	Takaeang				Takaeang	Takaeang
Coastal low lying	SIP	Bareho	Bareho		Bareho	Bareho		Bareho	Bareho
Coastal settlements on high islands	SIP	Vaimaanga				Vaimaanga	Vaimaanga	Vaimaanga	
	VR	Ambu	Ambu	Ambu	Ambu	Ambu		Ambu	Ambu
	IR	Lord Howe	Lord Howe	Red Beach Lord Howe	Red Beach	Red Beach	Lord Howe	Red Beach	Red Beach Lord Howe
	ED	West Coast Communities			West Coast Communities	West Coast Communities		West Coast Communities	West Coast Communities
Upland or inland	VR	Vaiea		Vaiea	Vaiea				Vaiea
	ED	Matupit	Matupit		Aruligo			Aruligo Matupit	Matupit
Highlands	SIP	Managalas Papae/ Kolosulu	Managalas Papae/ Kolosulu	Papae/ Kolosulu	Papae/ Kolosulu	Managalas Papae/ Kolosulu	Managalas	Managalas	Managalas Papae/ Kolosulu

[1] Mobility types: SIP – Staying in place; VR – Voluntary relocation; IR – Informal relocation; ED – Environmental displacement.

Some broad patterns worth noting:

- Based on their current geographic settlements, all communities perceive and/or experience a range of NELDs.
- All eight relocated and displaced communities have experienced NELD in relation to their previous locations.
- All relocated/displaced communities are experiencing climate change impacts in their new locations with associated NELD. While they contemplate future moves, they reiterate intentions to stay in place.
- All communities experience health and wellbeing as a NELD.
- Highlands and atoll communities staying in place experience all climate mobility associated NELD. This is surprising given the variance in the topography of each settlement. This indicates the nuancing of categories of the NELD typology. For example, highland communities do not have the same relationship to the sea as atoll communities, but they share deep connections to their lands and waterways.

4. Communities

Nine of our 17 communities are in coastal areas of atolls and low-lying islands. Three have social relations locally with their community members located elsewhere within their national borders. Three also have transnational connections outside of their national borders, and three have connections with Indigenous peoples in their host countries.

5. Findings

For every tangible loss there is an associated intangible loss. (Niutao, Tuvalu)

5.1 Community perspectives and experiences of loss and damage associated with climate mobility

All our tradition, our culture, the way we do things will be lost. Our mako, tila, I don't think these things will last, because if we move, we will have to change if we want to fit in to integrate into a new place and the laws of that place. Unless that place agrees that Pukapuka you can continue all the ways that you do things. Our

> *cultural practices around our relationships with each other will disappear. Our crafts, and everything that is dependent on our natural resources will disappear, because there won't be any coconut trees and other things that we get from our environment. Our traditional knowledge of the ocean and fishing will disappear. Traditional knowledge will be lost because we have some people who are skilled at sailing. They know where Nassau is and other significant areas in the ocean. Even the way we worship will change. We will not be able to worship 3 days a week and three times on Sunday if we are going to move to another country. Things related to our land, the sea, our humanity and spiritual side will disappear. (Pukapuka, Cook Islands)*

The magnitude of loss is immense. The harm is all encompassing as it permeates every aspect of community life, and relocation is a daunting possibility. The passage above conveys the anticipated losses, and because so much is at stake, the prospect causes fear and anxiety for the community, its groups and members as they contemplate leaving.

Using our analytical framework, we explore the dimensions of NELD informed by community perspectives and experiences to clarify the types of loss and damage by mobility types.

Noneconomic loss and damage of staying in place

Findings from nine communities provide insights about staying in place and the influence of NELD on their mobility decisions. Climate change impacts due to increasing heat, drought, sea-level rise, storm surges, and king tides contribute to the losses to biodiversity and ecosystem services. These stem from their links with their land and seas and have compounding effects on other aspects of livelihoods, cultural practices, ways of being, and traditional knowledge.

Atoll communities are already experiencing the impacts of climate change and expect to continue to do so. They also recognise that there will continue to be losses. Physical loss and damage are being experienced now with biodiversity and land and examples of losses to their health and wellbeing, cultural sites, and connection to land and sea.

> *We are living with climate change. The impact of climate change can be seen with what it had done with our land, resources, sea, and survival. As a result of coastal*

erosion, there are houses and homes that are on the brink of washed away or got damaged. Some plants and trees are no longer there. They uprooted and got washed away. Primary school buildings are not in good conditions and can be seen that, maybe for another year or less, there will be water everywhere in that place. (St. John, Betio, Kiribati)

Community members express losses such as loss of culture and ways of being due to adapting to the environment they are living in now.

Yes, because we have to figure out how we will respond to these changes. We really have no choice but to adapt. I think that in the process of adapting to changes, we have to accept that we may lose our culture. I mean we are already adapting to the environment and time that we live in. (Pukapuka, Cook Islands)

The distinction between climate change adaptation and forced migration due to loss and damage highlights the complex dynamics of climate-induced mobility (Pill, 2020). In contemplating migration, members describe the different types of loss associated with everyday life. This is exemplified in workshops from Pukapuka:

We will lose the way we plant, especially the wawa and the way in which we look after our animals. We will lose our crafts such as weaving, making vaka and other carving, because our natural materials will be no more. We will lose our wonderful practice of communal gathering of food and sharing this for all in the community. We will lose the kavekave and all our other practices that are unique to our way of life and to our identity as people of Pukapuka. (Pukapuka, Cook Islands)

We will lose the essence of every practice that we have that is based on the village (oile), tawa, yolonga, wua and pule. With the loss of everything that is related to our identity and who we are, we will be lost. (Pukapuka, Cook Islands)

These terms refer to community social structures and arrangements, various everyday activities based on traditional knowledge, and an island community's way of doing things. Losing the essence of these things signifies a profound loss to the interconnected, deeply spiritual sense of being inherent in their ways of living. It represents more than just a loss of tradition; it reflects the erosion of the spiritual connection that binds their existence.

Atoll community members express the loss of their culture with relocation and the difficulty of adjusting to life in a new location. There is real concern about:

> *Losing one's culture and adapting to the new environment which one is not familiar with. (Atafu, Tokelau)*

Traditional knowledge and practices are being lost:

> *Our old women nowadays, some still know how to make the leaf thatch, and some do not know. (Niutao, Tuvalu)*

In Niutao, this is due in part to the convenience and reliance on modern materials considered to be longer lasting, which contribute to the loss of skills. However, with increasing heat, there is a need for cooling structures, and the value of these diminishing skills becomes more apparent. We note that modern materials have some advantages but may be hazardous in extreme weather due to heat, storms, and floods.

Losses to culture, language, and future ways of being are apparent amongst their young people. For low-lying atolls with small populations, climate change has a disruptive effect and occurs in a context where education and employment challenges exist. Resources are needed to increase wages and work hours. Skilled people are also needed for schools and hospital services in Tokelau. Children are losing their language. There is fear of a "loss of youth to mobility" where all these drivers compound to provide little incentive or options to remain rather than seek opportunities overseas.

> *The Taupulega and parliament ought to address these unavoidable consequences of loss. (Atafu, Tokelau)*

The loss of biodiversity in terms of abundance is apparent for all atolls. Communities identify fewer fish or fish that have immigrated due to warmer waters, vegetation that is not growing as well as it used to due to saltwater intrusion, and changes in rainfall that lead to changes in cultural practices.

> *We are struggling to get fish in the kavekave. In the past, each tawa used to get 100 tuna and they will share this to the island. This year they only got 20-something, and so the sharing of the fish has to change. (Pukapuka, Cook Islands)*

Diversity and abundance are important for the wellbeing of people and ecosystems alike. The impact of sea-level rise can be seen in the form of saltwater intrusion into swamp areas, where taro is grown, in many atoll communities. The loss of swamp crops contributes to changes in food sources and reliance on other purchased replacements such as rice.

> *If we take this crop pulaka [taro], before it is very hard to die but as time went on to around 2002 it started becoming affected from underneath the swamp. Then they started to die off. Time went on, there were completely no pulaka under the swamp. Now there is no pulaka swamp. Now it is all dead. (Niutao, Tuvalu)*

The loss of technology and technology knowledge as life sustaining tools is also apparent.

> *Back in the days, my man, the dried coconut leaves were used to light-up the dark and flying fish in the ocean. It is known as the tuulama ite vaka. The leaves [lama] are burned and someone holds it at the front of the canoe.*
>
> *The way in which the leaves are burned is that it should not be fully flamed, but it is important for the person holding [tuulama] the leaves to see that the flying fish turn red in the water. If the flying fish turns red, it means it will not fly and ready to catch them. So, you just scoop them. But if the leaves [lama] is fully flamed, the flying fish will fly away. (Niutao, Tuvalu)*

Coupled with climate change impacts is a sense that there is less interest in working plantations located out on uninhabited but cultivated islets of the atoll despite modern technology.

> *There is a huge change, our fore-fathers worked very hard, these days we hardly do work out in the outer islands these days, yet we now have easier access with outriggers and boats. Less interest in these activities. (Atafu, Tokelau)*

From the transnational community perspective, the effect of climate change adds to losses in relation to health and wellbeing and connection to place. In expressing deep sorrow for the loss of the beauty of home, the community puts it down to the effects of climate change:

The change is tremendous. I was born in 1952, as a 5- to 6-year-old I would roam a large sandy beach on this very site. Now this beach has disappeared. (Porirua community, Tokelau)

An Aotearoa New Zealand-born Pukapuka member who had visited Pukapuka as an adult shares:

At first, I was so happy. Because growing up I had heard about what Wale was like. The way it looked. What people did. What they ate. The legends and where they happened. Then when I got there, I was like – where is it? Where are these places? Like I was told by my parents about when they were kids, and they used to retrace the giant footsteps of Uyo along the reef. When I got there, there were no footsteps of Uyo on the reef. The sea was too high to see the footsteps of Uyo. There were other legends that I was told about. But those places are not there anymore. (Pukapuka, Cook Islands)

Overall, the profound noneconomic losses faced by atoll communities due to climate change impact can significantly influence mobility decisions, exacerbate vulnerabilities, and necessitate urgent action to support adaptation and resilience-building efforts at local, national, and international levels.

As a coastal community, Vaimaanga community members' perspectives resonate with other communities. The losses of cultural values and possible displacement are a deep concern. Temperature extremes, intense rainfall events, dry spells, and high seas are noticed but the damage caused by sea storms combined with a king tide event is a significant turning point for many with the realisation that future events like this and the extent of the damage are likely to happen again.

I have pictures of land disappearing. the land went back 1.5 metres in 2021 versus 6 metres in 2022. (Vaimaanga, Cook Islands)

The emotional impact is also felt due to seeing cultural spaces destroyed along with build-up of sand in the lagoon disrupting the biodiversity and access to food sources.

Just staying here on the beach, back in the days we use to harvest the sand, but now it is forbidden. but what I am seeing is that there is a build-up of sand on the shores. The build-up gets taken by high seas. The lagoon is not deep anymore. One

noticeable fish in the lagoon that's not around now is eke [octopus]. Back in 80s, when we use to fish around, heaps of them. Now, the sand has covered most of the holes, so the sand needs to be harvested. (Vaimaanga, Cook Islands)

In highland settlements, community members provide insights that show collective agency and capacity of community resilience to deal with potential losses and damage to biodiversity and ways of living.

Losing belongings like property, gardens, homes, even small items such as pillows, can be incredibly challenging to replace. This is why we strongly discourage our youth from fleeing in the face of disasters. Instead, we emphasise staying rooted in your own area, on your own ground. By remaining present during difficult times, you can learn, gather resources, and find ways to recover what's lost. Moving to a new place as a stranger can be incredibly tough—you might lose pets, tools like knives crucial for daily life, or the ability to cultivate a garden without necessary tools. Our advice to the younger generation is based on these smaller challenges we've faced. (Naokanene in Managalas, Papua New Guinea)

In the past, our ancestors cultivated and harvested according to the seasons. However, today, we've adopted a different approach by creating our own calendar due to climate change. This change allows us to plant and harvest at any time, diverging from our traditional calendar. (Itokama in Managalas, Papua New Guinea)

Despite harm from environmental events, another community chooses to remain.

We experienced landslides and earthquakes. But we continued to stay in our villages after we mitigated the damages caused by the natural disasters. If I am asked to leave my village, I cannot because it is where I grew up and spent my life to date – we get used to that place, and it is part of us. Despite the hardship we experience, we will continue to stay there. (Papae/Kolosulu, Solomon Islands)

Bareho, the coastal community of a low island, like Takaeang, Aranuka is facing current losses caused by sea-level rise, and inundation. Weather patterns are no longer predictable.

Before old people can predict weather pattern using moon, crop season and months to determine when will be rainy season, windy, sunny etc. now the weather pattern is irregular. (Bareho, Solomon Islands)

Many accounts of damage due to sea-level rise are recorded, affecting biodiversity, and making fishing and gardening increasingly difficult.

Today you hardly see any pawpaw in the island compared to before, this may be due to the high level of salt in the soil as a result of the sea-level rise hence gardening is done in the mainland. (Bareho, Solomon Islands)

One of the big changes experienced is the sea-level rise. This has squeezed the land in Bareho which results in very small space available now. Before the land was a few metres away from the sea shore but now it was washed away, and they left with less land space. (Bareho, Solomon Islands)

There is also a change in fishing. There is a type of fish they called "Pasara," and it usually comes in January, but now that has changed, and it comes in March instead. Before they usually fish according to the months, weather patterns, moon, but now that has changed, and it is unpredictable. I wonder what will happen with the high tide or sea level will it bring good things? (Bareho, Solomon Islands)

Loss of land and special places are visible.

On the point called Ghatogana in Bareho, before sea does not cover the land or does not go over the island from one side to the other side of the island but now sea-level rise covered the whole area during high tide.

During that time we used to play on that area but now the kids cannot play there because it is covered by sea. (Bareho, Solomon Islands)

We have land on the mainland that community members can move to. We will miss our sports ground, schools and churches. If we move, we will have to paddle back to Bareho to access those services because it will be far for us, or we will have to rebuild again. We will also miss our neighbours, friends and families while

> *also leaving behind our fruit trees beside our homes, if we have to move. (Bareho, Solomon Islands)*
>
> *Reluctance to move is based on loss of connection and scared sites. It is the place where ancestors, parents, spouses and other loved ones are buried. They tend their graves as part of maintaining their relationship with them. So, if they relocate the graves will become covered with bushes and this will make them feel sorry. If I move out, who will look after their graves? (Bareho, Solomon Islands)*

For all staying in place communities, many are reluctant to abandon their lands and homes. Older generations prefer to remain, while younger generations have moved.

> *Each family built their own wharf and put stones on the way to prevent the sea getting to far into the land. But others decided and finally moved to the mainland for better living. My two sons moved to the mainland with their families too. (Bareho, Solomon Islands)*

With the impact of sea-level rise affecting garden sites, those moving report,

> *the main reason I moved to the mainland is because we were doing gardening there, building another home on the mainland will keep us closer to our gardens. (Bareho, Solomon Islands)*

For Bareho, moving is possible as they have customary land available. Nevertheless, there is worry and anxiety, and 'anticipatory grief' is evident (Lykins et al., 2023) at the loss to health and wellbeing as well as to ways of being for future generations. This includes loss of traditional homes and ancestral lands in anticipation of having to migrate sometime in the future.

Even though relocation may be to places close by with established relational ties, the distress related to potential migration is strong. This underscores the importance of community attachments to place and emphasises that physical separation from place and people is matched with a sense of loss in connection to land and sea.

Overall, all staying in place communities, despite their differences, are already experiencing the impacts of climate change and expect to continue to do so. They all

recognise that there will continue to be losses. Tangible and intangible losses and damages of all NELD dimensions are being experienced.

NELDs faced by communities due to climate change impact can significantly influence mobility decisions, exacerbate vulnerabilities, and necessitate urgent action to support in situ adaptation and resilience-building efforts at local, national, and international scales. The losses to cultural knowledge and practice are a serious concern.

Communities express reluctance to move. Even though relocation of some of their people to nearby places and within national borders has established relational ties, the distress related to potential migration is strong. This underscores the importance of community attachments to place and emphasises that physical separation from place and people match the deep sense of anticipated and actual loss of connection to land and sea, although this varies across generations.

NELD of voluntarily relocated communities

Three communities have relocated on a voluntary basis – Takaeang community moved from islands in the south to Takaeang islet, in Aranuka, in Kiribati. The Ambu community moved from a higher location to the coast of Malaita as part of a church-based settlement, and Vaiea has two stories of relocation that include a group of families from Niutao in Tuvalu that settled in Vaiea and the Indigenous community of Niue from the south coast village of Fatiau that relocated to the inland site due to a health epidemic.

Climate change impacts are upon all residents on Takaeang, Aranuka. The community is experiencing losses to land, services, and their way of being due to sea-level rise and coastal erosion. Their immediate concern is for their school buildings.

> *Primary school buildings are not in good conditions and can be seen that, maybe for another year or less, there will be water everywhere in that place. (Takaeang, Aranuka, Kiribati)*

Without intervention to relocate these facilities, they are worried and anxious about their children's education and providing them with tangible and intangible knowledge and tools to live now and achieve their aspirations for the future.

> *This is very sad because in the future, places affected will disappear and this is very evident in the school compound, Tekariaria, where houses are destroyed because seawater has gone inside. (Takaeang, Aranuka, Kiribati)*
>
> *The impact of climate change can be seen with what it has done with our land, resources, sea, and survival. As a result of coastal erosion, there are houses and homes that are in the blink of washed away or got damaged. Some plants and trees are no longer there. They uprooted and got washed away. (Takaeang, Aranuka, Kiribati)*

They also observe that the copra shed is no longer there as it has been destroyed by erosion and how, at another settlement, Tekariaria, on the southern coast of Takaeang:

> *Iai te kabaia man te kanaki arei bwa ea rawata teibo – there was something positive that came out of that problem and that was seaworms. People also earn a living from selling dried seaworms. (Takaeang, Aranuka, Kiribati)*

Loss and longing for one's family and home island are common perspectives shared by community members. In their move from Niutao to Vaiea, some of the community came at a young age. They have not been able to return since first arriving and feel a sense of loss and longing to visit and connect with where they are from.

Others worry that in moving away from their home islands, they may lose their identity. Going forward, there is a fear that the generations will eventually lose part of their identity as Tuvaluans, despite continuing to maintain their culture and their language as they reside in Niue.

Ambu community members recall making their gardens on sizeable allocations of land. Over time, with increasing populations, land for planting has reduced to make way for housing. As a coastal community experiencing rising sea levels, climate change exacerbates land demands and has a damaging effect to their way of being, future way of being, and cultural sites.

Their surrounding waters are also under threat due to the impacts of climate change, with warming waters affecting reefs and damaging biodiversity and ecosystem services, and their connection to land and sea and ways of being.

> *The reefs are like their second gardens and are shared resources amongst the nearby communities. So today most of the corals have died out and it's hard to easily catch fish like before. People have to travel out into the deep sea to fish now. (Ambu, Solomon Islands)*

Like other communities, they face not just climate change but also the effects of globalisation and development. Older community members worry about the new generation of children and grandchildren and their loss of language and ways of being.

> *New generation now do not know much about their culture or customs because there is lack of teaching it to them and this is becoming a problem in the community of Ambu. (Ambu, Solomon Islands)*

> *Some children not able to speak in the mother tongue speaking Pijin and English or a mix with other languages due to intermarriage … maybe only 20% of the people in the community still speak the original language, others was either mixed or Pijin. (Ambu, Solomon Islands)*

While these communities came to be relocated in these places for economic or faith-based reasons, climate change impacts, along with other drivers, exacerbate the habitability of their locations and their adaptive capacity to remain. Nevertheless, it is also apparent that their sense of resolve remains, along with their intention to stay.

NELD of informally relocated communities

Two communities made informal arrangements to relocate their communities from their atoll islands to coastal highland islands within national borders. These were not complete community relocations. Individuals and families moved and those who remained sustain the connection to the land. This would not be the case if the entire community relocated. These communities were suitable as case studies as intentionally partial relocation may be the most common form of community relocation.

Their perspectives include losses as relocated communities and as communities facing further relocation due to climate change impacts.

Members of communities that are not settled on their original lands, and have relocated within their countries, speak of the loss of their language due to their relocation:

> *One of the major issues is that their mother tongue is weaken and this new generation of Sikaiana people speaks Pijin [Solomons English] frequently in their daily conversation which leads to people rarely speak Sikaiana mother tongue language. (Red Beach, Solomon Islands)*

They also refer to what they would miss if they had to relocate again from their coastal locations to inland sites:

> *We would miss our way of living and also miss the seaside because we were getting used to living in the coastal area.... also miss being able to fish freely near the sea at Red Beach. I will miss my ancestors buried in the community. (Red Beach, Solomon Islands)*

Those who recall their ways of living from their original places reflect on what they miss about their original home: fresh fish, fresh air and seaside living:

> *Fish is one of the main things we miss by moving from Ontong Java to the settlement in Honiara. The reason being, in Honiara fish is expensive and sometimes not fresh. Fish is the main food, and it is also fresh from the sea into the pot rather than putting it in the esky overnight. Another thing that we miss is the feeling of breathing fresh air. In Honiara, our settlement is dusty. (Lord Howe Settlement, Solomon Islands)*

> *Mifala usually stay lo side sea ia so if ota muvum mifala for lo bush or inland ba mifala misim na side sea cos mifala people lo sea ia. Since we are getting used to living beside the sea so once we were to relocate to the bush or inland then we will miss the sea because we are people from the sea. (Lord Howe Settlement, Solomons Islands)*

If they are to relocate again, they would miss each other and their communal ways of living if they do not move as an entire community. It is also possible that they may go to different destinations.

> *The feeling of togetherness is also one of the main things we will miss. This is because in our culture the Polynesian people used to living together and helping each other so if some of our family member stays back then we will miss them. (Lord Howe Settlement, Solomon Islands)*

Collectively, the loss and damages for these two communities reflect a range of NELD types. These are related to losses they experience as communities that have already relocated and now face further losses with the possibility of further movement to other places.

NELD of environmentally displaced communities

Three communities have experienced displacement due to environmental disasters, including the devastating impacts of a volcanic eruption, landslides, and cyclone. All three are coastal settlements that have relocated to coastal (Matupit, Papua New Guinea) and higher inland locations (West Coast Communities, Niue, and Aruligo, Solomon Islands). They now also experience the impacts of climate change and identify associated losses.

Several villages along the west coast of Niue experienced the effects of Cyclone Heta that caused devastating damage and loss of life in 2004. Each village made the decision to move within their territorial boundaries to the upper terrace of their lands. Some community members made the move, while others remained on the lower terrace. For those who moved away from the lower terrace, the memories and associated trauma continue. One community member recollected as we stood on the site of their former home destroyed by the cyclone:

> *For a long time, we were still quite tied to this place, we had kids, they were born here, … this was our first home as a family, as a family unit. Yeah, we came back, and we plant these coconuts to remember the memories of this place. He [her husband] used to go hunting down there with [name removed]. He used to get really big uga [coconut crabs]. (West Coast Communities, Niue)*

> *When the whales come, you could hear them singing at night and that was the most beautiful, while I'm sitting there, baby's listening, baby is just moving around in my stomach, it was just, it was a real spiritual moment for me, listening to the whales and yeah, beautiful, the sunsets were beautiful. These are all those things that you love about the sea. But then when it [ocean] turns around and does that, you have this real appreciation for mother nature and yeah. We have to adapt I suppose, that's the only thing we can do. (West Coast Communities, Niue)*

In 1994, following a devastating volcanic eruption, people from Matupit fled to many different places. The East New Britain Provincial government provided immediate care centres at Sikut some 50 km away. It is unclear exactly who the original landowners were and how the land became alienated, but the Matupit Tolai people successfully obtained permanent title after being offered provisional licences on a relatively large block of land (3 ha) (Martin, 2013). The ways in which customary land has been alienated by the state and its enterprises since colonial times have led to complex histories of land tenure that are difficult to fully understand (see Filer, 2011; Martin, 2013; Yala, 2019). Almost 30 years later, people are returning from the 'forced' resettlement and remaking their home close to the still-active volcanoes.

> *We are losing our family ties. We were separated after the volcano [eruption]. Some are in the resettlements and others are on the Island. We are not really connected to each other. (Matupit, Papua New Guinea)*

> *Especially the volcanic eruption and the climate change has really affected us in our village. We lost plenty things and where will we get help and the money to support us with our basic needs. We really struggle to get minor jobs to raise income to restore our homes again. To build our homes again, we bought roofing irons and milled timbers. Majority of us used bush materials to restore their homes. (Matupit, Papua New Guinea)*

The Aruligo community, in their relocation efforts, cleared the land, built houses, and planted food gardens and trees with some government assistance on their new inland site. But they have limited access to trees for canoe building, carving artefacts, and weaving materials as they customarily belong to others. Without access to these resources, the skills and tools needed for these technologies are at risk of being lost.

Ways of being have been damaged with the relocation from the Weather Coast where they could rely on taro and yam as staples.

> *When we move here to Aruligo, it was really a change because we cannot grow taro because of the heat of the sun. (Aruligo, Solomon Islands)*

Social cohesion has also been damaged, and people are missing the togetherness of family.

> *We really miss the sharing and caring of each other back in the days. We used to share whatever they had with the villagers unlike in our current home. Families only care for their own family's needs and wants to satisfy themselves rather than sharing and bring togetherness in the community. (Aruligo, Solomon Islands)*

This loss of connection to their place also resonates, with some contemplating relocating again.

> *I would miss the properties I have built in Aruligo … and maybe our culture will slowly die if we adapt to a new place with other traditions that are not similar to ours. (Aruligo, Solomon Islands)*

As communities of survivors, relocating to secure places following devastating events brings stability. However, the memories of having to abruptly abandon their homes, including the retelling of memories to the next generations, tells of a sense of loss and longing that endures (Kothari et al., 2023; Tiatia et al., 2022).

Relocated communities live with the losses associated with their home communities. They also experience the impacts of climate change in their adopted locations. They experience new losses emerging, as, regrettably, they now have to consider the possibility of relocation again.

5.2 Gendered and generational perceptions of NELD and mobility decisions

Communities' gendered and generational perceptions of loss are shaped by climate hazards that can be slow or fast onset and make both anticipating and responding to associated risks difficult. This includes not just hazards and challenges but also community-identified solutions as part of community resilience and adaptive capacity.

Gendered perceptions of loss and damage and mobility decisions

Gendered perceptions of loss and damage and their influence on climate mobility decisions are significant and often overlooked. Climate change affects women and men differently due to existing gendered relationships, responsibilities, and access to resources. For example, in atoll communities, women often manage household tasks and collect shellfish while men undertake open ocean fishing and community decision-

making responsibilities. Perceptions of loss and damage are also likely to differ. From a mobility lens, women in a relocation or displacement context may face additional risks and vulnerability including limited access to resources and exposure to gender-based violence (Ayeb-Karlsson et al., 2023). “The loss and damages associated with natural hazards can be emotionally devastating particularly for women who are most often on the receiving end of a man’s anger” (Singh et al., 2022 p.10). Their perceptions of loss may be compounded by concerns for their safety in unfamiliar environments influencing their mobility decisions.

Due to their differentiated roles, women and men experience the loss of multiple NELD dimensions differently. This following extract exemplifies the interconnected nature of these dimensions with the role of Niutao men as fishers and their responsibilities to feed the community.

> *There are peoples or families who were gifted with the skills known in Niutao, it is called te pouli. Usually associate with gods (tupua), Mataliki and Melemele. So these people, they lead the group of fishermen known as te fuavaka. During the journey, the leaders of te fuavaka will organise and direct the fishermen on how to catch the flying fish in the dark. All the boat and fishermen of the island follow, they work together in catching the flying fish for the benefit of all people on the island. (Niutao, Tuvalu)*

Biodiversity and ecosystem services, Indigenous knowledge and practices support the collective health and wellbeing with their life-sustaining tools and ways of being.

> *On their return to shore, the catch is distributed. The island church pastor will always be the first to have shares of the catches, then the fishermen will take their shares. Should they catch lots, the catch is distributed to all the families on the island. Thirty or more fishes are distributed amongst the families. Everyone on the island will receive a share of the catch. All the Niutao people will eat from the catch, but not for sale. It is sharing and in accordance with Niutao custom. (Niutao, Tuvalu)*

The loss of such values, knowledge, and practices would be profound. Already, changes are taking place as identified in other atolls:

Nowadays, the boys hardly know how to fish. (Funafuti, Tuvalu)

Traditional boats are rare now because we have no resources to make and pass on knowledge. (Funafuti, Tuvalu)

The natural environment has changed. For example, in the past we used to build vaka from the trees. Those trees are no more. We don't build vaka. Our fishing boats are built with imported materials. (Pukapuka, Cook Islands)

With climate change combined with other factors, such as population growth, increased pressure on land use, and changing agricultural practices in some settings affecting access to resources, the loss of cultural practices such as weaving and making shell necklaces, and loss of livelihoods, are also apparent.

There have been significant changes to the conditions and environment. This is why mats made by our women are getting more and more expensive. This is because abundance of the coconut trees and pandanus trees have been reduced, which also results in the decrease in production. (St. John, Betio, Kiribati)

Since the big cyclone, there are hardly any seashells. I used to collect kauri shells that I used to collect before. I use to collect on the sand, the dead ones … it's not the same now. (West Coast Communities, Niue)

From a transnational women's perspective, retaining women's cultural practices and social cohesion signals changes from being in new locations and the different demands on time.

I feel like I've lived my adult life here in New Zealand. I remember growing up back home, my mom taking a tin can across the road. Every woman would meet up at the church and everyone helps clean the church, community places. The women coming together to do their weaving together and I can see it happening here. Getting everyone together. I do see the women community up at Matauala Hall for whatever project. I do see that continuation from back home happening here. But that's a bit different here. They try to have some sort of continuation of what they can do as a community here in NZ. I have to say I'm a bit guilty having not being there most of the time at our community there at Matauala. So I apologise but I try

> *to make the time and so it's great that everyone goes there and makes sure everything carries on meeting up and doing projects. (Porirua community, Tokelau)*

In deciding to relocate, retaining women's activities can contribute to feeling connected. This was also seen in Fiji with improvements in feelings of safety and community cohesion with the Denimanu and Vunidogoloa villages following relocation. Unfortunately, this is not always the case for all relocations. The loss of social and community support can be devastating (Piggott-McKellar et al., 2019).

Gender-diverse perceptions of NELD

Perspectives from diverse gender and sexual-orientation communities are also underrepresented and overlooked. Our research offers a small contribution with some insights shared by the members of the gender-diverse community in the Cook Islands who identified as Anuanua (rainbow). A significant concern is the risk of the Anuanua community being marginalised or forgotten in climate change and disaster response and recovery efforts. Historically, vulnerable communities, including those from diverse gender and sexual orientations, have been disproportionately impacted by natural disasters, yet they often receive less attention and support (Johnson et al., 2022).

> *In the face of climate change-induced disasters, there's a heightened risk of the Anuanua community not being prioritised, potentially leading to increased vulnerability, discrimination, and exclusion. This lack of prioritisation can have severe consequences for the mental and physical wellbeing of LGBTIQ individuals within the Anuanua community, exacerbating the challenges they already face in terms of acceptance and safety. (Rarotonga, Cook Islands)*

Furthermore,

> *Environmental changes and societal pressures have significantly impacted the mental health and overall wellbeing of individuals within the Anuanua community.*
>
> *The stigma and negative perceptions from the broader community have contributed to a sense of isolation and psychological distress among Anuanua community members. Moreover, the vulnerability issues, including experiences of rape and sexual abuse, have left lasting scars and emotional trauma. (Rarotonga Cook Islands)*

Regarding losses to health and wellbeing, climate change impacts will also compound Anuanua experiences of damages to health and wellbeing and ways of being that make up the unique Pacific identities and ways of life. Much more is needed to address the climate mobility associated NELD of diverse members of Pacific communities.

Generational perceptions of loss inform mobility decision

Understanding generational perceptions of loss and damage is essential for effectively managing climate-induced community mobility and supporting communities in making informed sustainable decisions. Engaging with elders, young people, and community leaders is needed to ensure policies and interventions are sensitive to aspirations, needs, and values of all generations.

The perspectives on NELD of young people from the communities show a common understanding that losses are due to climate change include the loss of traditional practices and places, loss of health and wellbeing, loss of language, and loss of future ways of being. There are mixed perspectives on future ways of being, notably youth from communities already facing increasing threats to the habitability of their lands appear more cognisant of what is at stake.

Climate change affects agriculture and food security, and storm surges have a destructive impact on atoll and coastal food gardens in particular. From these tangible observations, youth also observe intangible aspects of NELD.

> *There is the emotional impact of witnessing loss without immediate solutions. (Vaimaanga, Cook Islands)*

In discussing their future, the Pukapuka youth workshop express a positive outlook:

> *Our traditions and customs are strong and will last always. (Pukapuka, Cook Islands)*

Managalas youth share:

> *Conservation will help me. Conserving my forest will help my life. (Managalas, Papua New Guinea)*

The impact of climate change on water security is also raised by younger people.

> *We always face water insecurity during droughts. (Niutao, Tuvalu)*

> *Crops are struggling due to drought and rising sea levels, making it tough for most plants to survive in this harsh environment. For these reasons, it is very hard for every one of us to live a good life if these issues are always there every day. (St. John, Betio, Kiribati)*

The Aruligo youth's hopes for the future reflect other challenges in addition to losses associated with climate change.

> *The village still maintains their culture and tradition, despite the issues with young people drinking and making disturbances. They hope they still have cultural ways to solve problem. They still maintain the tradition that in their tribe women have power over the land while men are the protector. (Aruligo, Solomon Islands)*

Bareho youth's concerns reflect a broad understanding of climate and other challenges, including losses and what should be done by their leaders.

> *Due to climate change or sea-level rise, the island of Bareho has started to sink. In 20 to 30 years' time, we want the children to live a good life, so chiefs and elders should start thinking of arranging area such as the mainland that has good water and also area for making garden to have access for food for the people of Bareho to relocate to in order for their children to have a good life. This means that having a good area or land that is not affected by sea rise, have access to water and food. (Bareho, Solomon Islands)*

Youth of Red Beach share that sea-level rise would affect their futures.

> *Due to low water level the Red Beach area has been affected by water and sea-level rise. So may be in the future they will only talks about their memory growing up in the village, that both good and bad. This included the loss of their culture and language has started. (Red Beach, Solomon Islands)*

All generations share similar perceptions of the loss of future ways of being including the importance of cultural sites and the possibility that having no burial grounds for future generations would prompt the need to relocate. For example, the Ambu community see the deterioration to their seawalls, burial grounds, and foreshore dwellings, which are exposed to sea-level rise, inundation, and an increasing population.

Losses of Indigenous and local knowledge are shared. Elders from Papae/Kolosulu reflect on their ability to read the weather patterns and knowledge of how to mark the sun's movement during different times of the year against the position of trees. Nowadays, they do not follow these patterns. Patterns have changed. The months of January, February and March used to be the months of rain but this has changed, with rain also experienced in July and August – Papae/Kolosulu, Solomon Islands.

Changes in biodiversity are taking place that community members perceive will influence mobility decisions.

> *The crops, coconut trees and breadfruits were abundant, unlike today we can see that the trees and crops are not abundant. Our Tuvaluan people depend on these crops and trees, as well as fish. However, the people are running away to New Zealand because they are looking for a better life for their children. (Funafuti, Tuvalu)*

Perceptions and experiences of loss and damages are not always expressed as directly related to climate mobility. However, concern and worry for what challenges future generations will face are expressed.

> *The share of the lands is not enough when it comes down the family tree line and it's distributed out individually. There won't be enough for the younger generation. (West Coast Communities, Niue)*

Older generations also observe changes that are taking place that they worry will affect their young people and their futures.

> *There are outside influences that cause young people to forget the traditional ways and the culture. So there is a loss in cultural activities such as the loss of making traditional tapa cloths and other items. Young girls are no longer involved because they are not interested in making tapa clothes for dancing. (Serefuna Managalas, Papua New Guinea)*
>
> *The present situation is that we need money to have food, not as back in the days we lived on local food products; There are lots of things we need money for, hence, why we send our children overseas to support the family financially. (Funafuti, Tuvalu)*

> *Our language will die. Children nowadays speak mainly English. I never speak in English to my grandson. If you talk to me on the phone, you have to speak in Niuean. But they never listen, they just keep conversing in English. But I still speak in Niuean even he keeps talking in English. But that's how I see it now. (West Coast Communities, Niue)*

Transnational communities are already aware of losses associated with ways of being and the challenges in retaining their cultural values, knowledge and practices.

> *We have a night where we want to teach our songs and chants, but when you call the community, not many people will come. It's always mainly the older ones. But it's the younger ones that we really need to learn these songs and chants, so that they won't be lost. (South Auckland Pukapuka Community)*

Younger generations observe the deterioration of their physical environment and loss of land, but their focus isn't just on the loss. Rather there is also hope and a positive outlook on having a safe place in the future and what would make relocation successful. A young woman from Lord Howe Settlement shares *"We are living between a river and the sea. We are really affected by climate change and sea-level rise."* Her hopes for the future are to see her "*community relocate or move somewhere that has land and area for them to live in a place that is safe and also able to make their garden*."

Deterioration of their physical environment and cultural sites, changing weather patterns, and loss of their traditional knowledge and cultural practices all contribute to worry and concern among older community members. These contrast with the hope and optimistic outlook that are present among younger community members.

To summarise, young people's perspectives of NELD show that losses due to climate change include the loss of traditional practices and places, loss of health and wellbeing, loss of language, and loss of future ways of being. Young people have mixed perspectives about future ways of being; notably, youth from communities already facing increasing threats to the habitability of their lands appear more cognisant of what is at stake. In contemplating their future, young people also identify other challenges and what should be done by their leaders. They also express optimism about having a safe place in the future.

All generations observe the deterioration of their physical environment, loss of land and cultural sites, changing weather patterns, and loss of their traditional knowledge and cultural practices. Elders identify that the losses of Indigenous and local knowledge and losses to biodiversity will influence im/mobility decisions. Other generations also observe changes taking place and becoming more extreme. They worry about the effect on them and particularly young people and children and their futures.

All generations share perceptions about similar NELD. Loss of future ways of being with loss of language, storytelling, and the means of conveying spiritual narratives and symbolism, and losses to cultural sites through abandonment and neglect, would influence im/mobility decisions.

Overall, understanding generational perceptions of loss and damage is essential for effectively managing climate-induced community im/mobility and supporting communities in making informed sustainable decisions. Engaging inclusively with all generations, elders, young people, and community leaders is needed to ensure policies and interventions are sensitive to aspirations, needs, and values of all generations.

6. Conclusion

In general, the viewpoints and encounters with communities regarding NELD reveal the multidimensional nature of climate-induced im/mobility-associated loss and damage. All communities identify common losses associated with immobility, planned relocation, and displacement that inform their im/mobility decisions. Staying in place despite the changes is preferred wherever possible by most research participants. Gendered and generational perceptions of loss also inform im/mobility decisions. Collectively, these perceptions and experiences provide actionable insights to inform policy opportunities.

Decisions to relocate due to experiencing NELD may occur, but it is equally crucial to recognise that decisions to move can themselves lead to NELD. It is essential to exercise care because the relationship between mobility and NELD is intricate, and impacts can manifest in both ways. Experiencing NELD might prompt communities and members to relocate as a solution for coping or survival. Alternatively, moving can bring about its own set of NELD such as disruption to community cohesion and loss of cultural identity.

Therefore, it is important that policy opportunities acknowledge the multidirectional nature of the relationship between NELD and climate change im/mobility.

6.1 Scale and pattern

The scale of awareness regarding NELD associated with climate change and human mobility is widespread across all communities and includes a wide range of tangible and intangible losses or potential losses. The losses and the prospect of losses shape decisions (in advance and in response to losses occurring) about whether to move or stay in place. Tangible or material losses mentioned include loss of land, homes, trees, seawalls, and community infrastructure like schools and churches. The cost of moving these kinds of attachments can be estimated, and communities are in general agreement that these costs are outside their ability to pay so they will need government help.

The nature of intangible losses and damage is equally of concern and reported as being invaluable. This includes loss of language, loss of identity, loss of cultural practices, and loss of space to be a community. The value of intangible loss and damage has not been calculated yet is always expressed with deep sadness. Although young people have a more positive outlook in terms of possible mobility options, there is still a recognition of the vast loss and damage their communities will experience due to the impacts of climate change, and the multigenerational scale of influence this will have on habitability solutions and decisions.

6.2 Opportunities

There is no doubt that the magnitude of climate im/mobility associated loss and damage experienced by Pacific communities will be enormous, even if only tangible losses and damages can be measured, and the intangible can be estimated, they will be difficult to quantify. Pacific governments will need to secure significant resources to facilitate the safe stays and safe journeys of communities if and when the time comes. New global financial modalities will need to be resourced. Community empowerment and participatory planning will need to be strengthened if the action is going to be transformative rather than 'too little too late.' Global stakeholders will need to step up – Pacific communities have no other choices.

Aotearoa has a unique opportunity to work with its larger neighbours to ensure just outcomes in the context of climate-induced mobility. Countries like Aotearoa should continue to provide regional leadership and technical assistance towards the implementation of regional mechanisms and national-level collaborations.

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