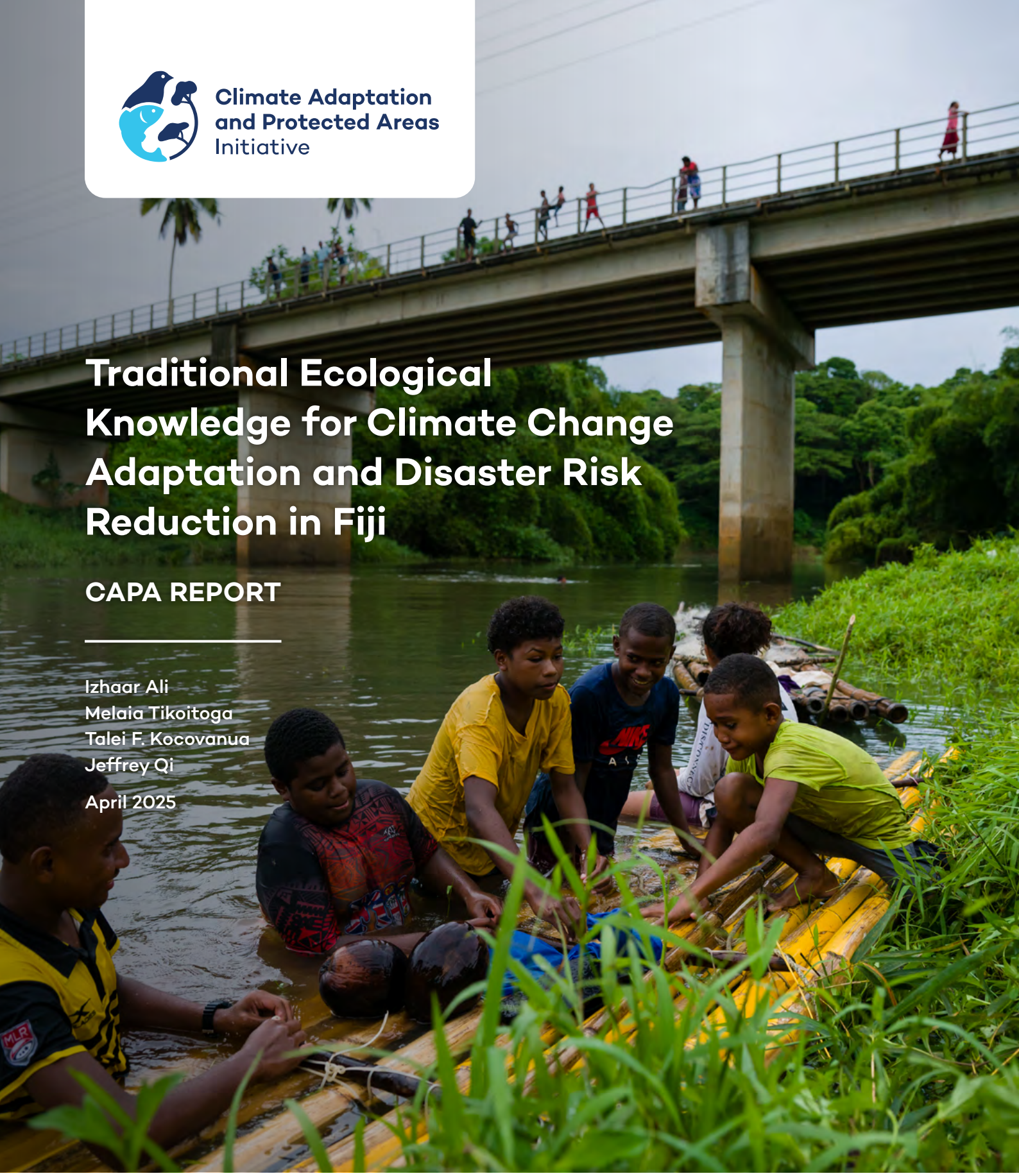
Climate Adaptation and Protected Areas Initiative



Traditional Ecological Knowledge for Climate Change Adaptation and Disaster Risk Reduction in Fiji

CAPA REPORT

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Project partners

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Acronyms and Abbreviations

DRR	disaster risk reduction
IPCC	Inter-Governmental Panel on Climate Change
NAP	national adaptation plan
SIDS	Small Island Development State
TEK	traditional ecological/environmental knowledge

1.0 Introduction

Traditional ecological knowledge (TEK) exists in all parts of the world in some way, shape, or form, either in written format or passed orally through stories or teachings. This wealth of knowledge has often been challenged due to its perceived lack or absence of a scientific method. However, TEK holds a strong scientific foundation given that it is a form of local knowledge accumulated and passed from generation to generation, based on centuries of extensive trial and error in, as well as learning and observations of our natural world (Tikoitoga, 2019). It is a fundamental part of the iTaukei people—the Indigenous People of Fiji—and their culture and traditions. As custodians of their land, the iTaukei people have used TEK to not only live but thrive in their specific surroundings throughout history (Veitayaki, 2005). However, livelihoods in Fiji and the broader Pacific region have been dramatically affected by the onset of climate change and its detrimental effects on people and nature.

Box 1. Understanding TEK

Berkes (2001) defines TEK as a cumulative body of knowledge, practice, and belief about the relationship of living beings (including humans) with one another and with their environment that evolves through adaptive processes and is handed down through generations by cultural transmission, including oral teachings, storytelling, and written documentation.

With limited resources and technology access, Fiji faces multiple challenges when it comes to its ability to adapt to climate change. As a small island state, its mitigation activities and ambitions, although commendable, contribute minimally to global efforts. TEK presents an opportunity and could play a significant role in adaptation and disaster risk reduction (DRR) strategies by leveraging its accumulated knowledge, unique insight, and sustainable practices, which will be further explored in this brief.

As part of the Climate Adaptation and Protected Areas (CAPA) Initiative, this brief examines the relationship between TEK and the adaptive capacity of vulnerable communities in Fiji, as well as how TEK assists in climate change adaptation and DRR. It is based on the ongoing work of the Fiji Government and hopes to contribute toward its efforts to preserve iTaukei customs and traditions, with a focus on highlighting how TEK can act as a useful indicator of natural disasters for DRR and climate change adaptation in a warming world.

2.0 Fiji's National Context

Fiji is a Small Island Developing State (SIDS) located in the Melanesian region of the South Pacific. It consists of an archipelago of more than 330 mostly uninhabited islands. With a population of more than 900,000, it is one of the most populated countries in the Pacific. The majority (87%) of the Fijian population lives on its two major islands, Viti Levu and Vanua Levu. Fiji also governs the island of Rotuma, situated approximately 465 kilometres north of the main islands.

Its economy is diversified, though primarily reliant on tourism and international remittances (World Bank Group, 2021). The country has diverse ecosystems, including tropical rainforests, coastal mangroves, and coral reefs. The climate is tropical maritime, characterized by a hot, humid cyclone season from November to April and a cooler, dry season from May to October.

2.1 Climate Change Risks and Vulnerabilities in Fiji

As a remote SIDS, Fiji is highly vulnerable to the adverse effects of climate change. It ranks 87th out of 181 on the most vulnerable country ranking on the ND-GAIN Index. There have been observed increases in temperature, precipitation, and the severity of storms, as well as decreases in the number of cool nights (Commonwealth Scientific and Industrial Research Organisation & Secretariat of the Pacific Regional Environment Programme, 2021). Sea levels have risen by 6 mm per year since 1993, more than the global average (Maekawa et al., 2023). Under all representative concentration pathway (RCP) models, Fiji is expected to see a substantial temperature increase by the end of the century, with a 2.7°C average increase projected under RCP 8.5 (World Bank Group, 2021). This projected climate change will result in an increase in extreme weather events, such as extreme precipitation and intensified tropical cyclones.

The primary climate change-induced threats to Fiji include severe tropical cyclones, sea level rise, mass coral bleaching events, extensive rainfall leading to floods, storm surges, and extended periods of drought (International Institute for Sustainable Development & Wildlife Conservation Society Fiji, 2025). There are, however, other significant climate-related stressors around groundwater salinization, shoreline erosion, and food security, though these are not as widespread (Lata & Nunn, 2012). A lack of climate change awareness combined with remoteness also significantly increases vulnerability, particularly in rural communities.

Most of Fiji's government facilities and primary industries are located and centralized in its capital city of Suva. This centrality increases the vulnerability of the area because potential natural disasters impacting central Suva could result in a collapse in communications, resource mobilization, utilities, transportation, and other essential services. The vulnerabilities of other basic infrastructure, such as water and electricity, are also high due to aging distribution lines, proximity to unprotected coastlines, and the lack of climate-proof infrastructure. Moreover, despite the best efforts of the Fiji government and the international community to mitigate climate change, the scale and pace of climate change are expected to exceed the adaptation limits of SIDS before 2100 (Inter-Governmental Panel on Climate Change [IPCC], 2022).

The implications of climate change have caused and will continue to cause catastrophic damage to Fiji's primary economic sectors, namely tourism and agriculture. This highlights the need for resilient infrastructure and disaster preparedness. According to the IPCC's Sixth Assessment Report, sea levels are projected to rise 5–10 cm between 2030 and 2050, and there will be severe coral bleaching events in SIDS before 2040 (IPCC, 2022). Although it is difficult to directly infer the extent of the economic losses and damages of tropical cyclones in SIDS, it is almost certain that the frequency and intensity of cyclones will increase within the Pacific region, resulting in severe economic and non-economic losses and damages in Fiji.

2.2 Climate Change Adaptation and DRR in Fiji

The Fiji government has placed significant emphasis on the implementation of adaptation projects, guided by its National Adaptation Plan (NAP) since its publication in 2018. Fiji's NAP is the overarching framework that strategically guides the government and other stakeholders to address the medium- and long-term needs of the country associated with climate change. It outlines 160 adaptation measures across 10 priority sectors to strengthen the country's resilience to climate change (Government of the Republic of Fiji, 2018a). It was among the first NAP documents submitted to the UN Framework Convention on Climate Change and is currently under review by the Fiji Ministry of Environment and Climate Change. Further, in 2021, Fiji's parliament adopted the National Climate Change Act, which provides a legal framework for the country's response to climate change (Government of the Republic of Fiji, 2021). Combined with the NAP, the Act provides the legal foundation for ensuring the government's long-term commitment to adapt to climate change and strengthen resilience. However, at the national level and drawing on Fiji's current status quo, much needs to be pursued as far as embedding the concept of TEK and DRR in national legislation and policy (Tikoitoga, 2019).

DRR projects or activities in Fiji are led and/or overseen by the Fiji National Disaster Management Office, guided by the National Disaster Risk Reduction Policy (2018–2030). This policy is one among very few that acknowledges the role of TEK in DRR, stating that "addressing DRR requires a multi-hazard approach and risk-informed decision-making process that is complemented by traditional knowledge" (Government of Fiji, 2018b). As the main actor in disaster response, the National Disaster Management Office promotes DRR through awareness campaigns and training conducted throughout the country. It is also responsible for coordinating the tracking of cyclones (with the Fiji Meteorological Service).

3.0 TEK in Fiji

3.1 What Is TEK?

For this case study, we have decided to use the term "TEK" instead of Indigenous knowledge because there is a distinct difference. TEK is more focused and pertains to knowledge about the environment and relationships between humans and ecosystems, whereas Indigenous knowledge encompasses a broader range of topics, which include social, spiritual, and ecological aspects (University of Minnesota, n.d.). In the national context, TEK can be best described as the knowledge and sustainable use of natural resources through generations of environmental observation or experiences acquired over thousands of years of human contact with the environment (Cagivinaka, 2016).

Tikoitoga (2019) states that TEK is a resource that is in danger of extinction in many SIDS, including the Fiji Islands. In most areas throughout the country, TEK has become dormant; however, elders in communities are working to ensure its sustainability by passing on their knowledge to the younger generation through stories and practical teaching. Nabobo-Baba (2006) highlights that the knowledge being shared is determined by its value to the people and their well-being *(sautu)*: "Many young people can neither identify the relationship nor are aware of any relationship between modern sustainable practices and TEK practices" (Cagivinaka, 2016, p. 12).

An important note is that TEK throughout Fiji is unique and endemic to certain areas, particularly varying in terms of indicators; for example, indicators of adverse weather differ greatly when being observed along the coast or the seas *(waitui)*, further inland *(vanua)*, or the air/stratosphere *(lomalagi)* (Tikoitoga, 2019). According to Nabobo-Baba (2006), iTaukei epistemology originates from the vanua, and this has been identified as the main foundation of knowledge among the people.

3.2 Traditional Governance in Fiji in the Context of Climate Change

Climate change governance at the national level is guided by the Fiji government. Agencies such as the Climate Change Division develop and ensure the implementation of climate change policies by coordinating with respective line ministries and more technical arms of government. In this regard, the Ministry of iTaukei Affairs provides oversight and guidance in all matters related to iTaukei communities. The Ministry plays a crucial

"Many young people can neither identify the relationship nor are aware of any relationship between modern sustainable practices and TEK practices."

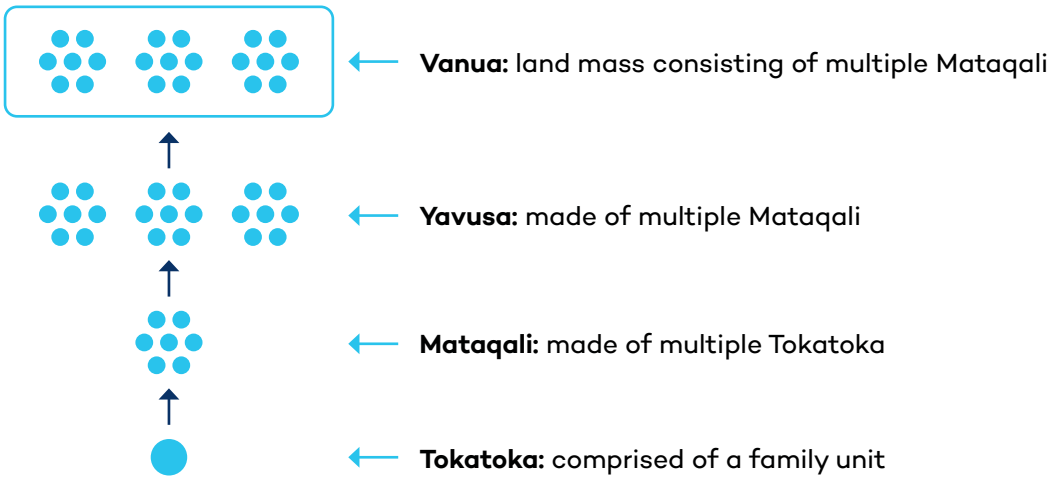
(Cagivinaka, 2016, p. 12)

role in preserving and promoting the cultural heritage, traditions, and rights of the iTaukei people. It is responsible for formulating and implementing policies that support the socio-economic development and the well-being of the iTaukei community, as well as overseeing the administration of customary land and assisting in dispute resolution through a subsidiary agency, the iTaukei Lands Trust Board.

The provincial councils are a key part of the Ministry of iTaukei Affairs. These semi-autonomous branches of government are spread throughout the 14 provinces of the country and provide information to the Ministry of iTaukei Affairs via a Roko Tui, who is in charge of, inter alia, local governance and administration of their respective provinces, resource management, and development planning. The type of land (native, freehold or crown) is a key determinant of which types of TEK interventions are applied in an area and by whom. For example, freehold land simply requires approval from the landowner for an activity to be implemented. However, native land requires thorough consultation with the respective land-owning unit and government entities, and priority must also be given to the traditional method of approaching land-owning units via the elders in a community. The provincial councils also play a vital role in disaster preparedness, working with national authorities to ensure that communities are prepared for disasters and that relief efforts are coordinated effectively.

Approximately 90% of land in Fiji is "native land" and thus controlled by the iTaukei Lands Trust Board. This is held under customary tenure and cannot be sold. A total of 6% of the land is under "freehold" title, and 4% is held by the government (Ministry of Finance of Fiji, 2024). Other ethnicities—which mainly include Fijians of Indian descent (approximately 37.5% of the population)—primarily occupy or own freehold and state land, with their presence being more prominent in urban areas and agricultural sectors. This distribution of land tenure reflects the historical and colonial influences that have shaped the socio-economic landscape of Fiji.

Figure 1. iTaukei social structure



Source: Adapted from Tikoitoga, 2019.

Traditional governance within the iTaukei community, which comprises 56.8% of Fiji's overall population, plays a critical role in the sub-national context. Traditional governance in Fiji is best described as multiple autochthonous chiefdoms spread across the two major islands and nearby smaller islands scattered throughout Fiji's maritime zone (Tikoitoga, 2019). Although Fiji has undergone political modernization since its independence, the roles and positions of chiefs are still seen as an essential part of cultural identity and governance within villages throughout the country; they will continue to play an important role in the response to a changing climate.

3.3 Traditional Ecological Knowledge for Climate Change Adaptation

Countries in the Pacific region understand the urgent need to adapt to the impacts of climate change. However, according to the International Monetary Fund (2021), Pacific Island countries require approximately 9% of their GDP or USD 1 billion on average, for climate adaptation investments, a figure that is impossible to dedicate for countries like Fiji. TEK could function as a cost-effective and ecologically friendly alternative to more conventional investments in grey infrastructure for climate change adaptation, such as seawalls and dams.

Tikoitoga (2019) discusses the effectiveness of traditional iTaukei bures (traditional thatched houses), which have been proven to be less susceptible to strong winds as opposed to more modern housing structures. A key advantage is their distribution of weight across the roof, which is crucially important given that roofs are the main vulnerability points impacted by strong winds. In the village of Navala on Viti Levu island, where houses were primarily constructed as traditional houses (bure), around 50% of them survived Cyclone Winston in 2016 (Elkharboutly & Wilkinson, 2022).

Moreover, TEK can also be regarded as an ecosystem-based adaptation intervention, which is defined in Fiji's NAP as "an ecological approach to climate change adaptation which places ecosystems at the centre of adaptation planning, strengthens ecosystems, conserves biodiversity, and maintains the resources they provide as part of an overall adaptation strategy to help people adapt to adverse effects of climate change" (Government of the Republic of Fiji, 2018a). Ecosystem-based adaptation involves the use of natural systems to buffer against the adverse effects of climate change while providing additional benefits, such as biodiversity conservation, enhanced ecosystem services, and improved livelihoods. For instance, the cultivation of thatching materials for traditional iTaukei bures could contribute to local biodiversity and ecosystem health and benefit local communities and their resilience.

Specific examples of TEK used as indicators for extreme weather and that provide adaptation benefits are described in Table 1.

Table 1. TEK interventions and adaptation benefits

TEK intervention	Adaptation benefit	Conservation activity
Coastal management Coastal management via the use of traditional construction techniques and the use of natural barriers such as salt-water-resistant trees that protect against coastal inundation and tidal surges.	These practices help protect the communities from sea level rise and increased storm intensity.	Typical wind- and salinity-resistant trees in Fiji include the Indian almond/beach almond, which provides natural barriers and other ecosystem benefits, such as nesting sites and shoreline stabilization.
Seasonal indicators and weather forecasting Animal behaviour and plant flowering times have been used as seasonal indicators and for weather forecasting; the flowering of plants, such as breadfruit and plantains, and the behaviour of animals, such as birds and fish, are taken as signs of impending cyclones in Fiji (Tikoitoga, 2019).	The ability to predict weather patterns allows communities to prepare for extreme weather events, increasing their resilience and reducing vulnerability.	Plants that help determine the likelihood of cyclones are planted throughout the community, helping to restore habitats that support biodiversity and ecosystem health. These flora may also function as a bridge between fragmented habitats of insects and birds to move more freely.
Traditional agricultural practices Traditional agricultural practices have allowed communities to survive even during droughts and floods. Diversifying crops, selecting species that are more resistant to climatic extremes and being able to identify the best soil types to plant in have resulted in sustainable harvests for communities during harsh seasons.	These practices help improve ecosystem health and enhance agricultural resilience by maintaining agrobiodiversity and ensuring that climate-resistant crops and seasonal crops are planted at specific times of the year.	Crop rotation helps improve soil health, benefiting soil organisms and often contributing to natural pest control. Traditional methods, such as terracing, also improve water retention in soil and reduce surface runoff into nearby water sources.
Observe changes in weather patterns Changes in weather patterns (extremely hot days) and celestial activity (rings around the moon) are also anomalies that have been observed and determined to be precursors of extreme weather events.	These natural early warning systems continue to help communities in rural parts of Fiji, which have minimum communication resources (radio, TV, etc.), increasing early warning in these communities.	Although it is difficult to determine a direct link between changes in weather patterns and conservation, increased rainfall or rainfall in arid regions can promote the growth of vegetation and support a wider range of plants and animals. Accurately determining weather changes also results in the planting of suitable crops and plants that flourish during the impending season.

Source:

3.4 TEK for DRR

TEK plays a significant role in DRR by offering time-tested strategies for managing and mitigating the impacts of natural disasters, especially in highly vulnerable ecosystems such as island communities. Studies throughout the world have indicated the importance of integrating TEK into DRR strategies (Bich & Ninh, 2017). This section examines the role of TEK in DRR efforts in Fiji and its contribution to early warning systems.

Storm and Flood Prediction

Multiple studies have confirmed the role of TEK in the prediction of natural hazards such as floods and storms. Communities in Fiji have been able to predict natural hazards by observing the behaviour of animals, plants, and insects. Storm prediction through observing cloud direction has also been documented in some studies, with the appearance of cumulonimbus clouds signalling heavy rainfall or storms (Chorley & Barry, 1998).

Natural barriers, such as trees, are planted along coastlines to minimize the impacts of strong waves and winds during storms. Communities also evacuate to elevated areas in extreme cases, depending on proximity to the sea or rivers. Through traditional building methods, houses are built on piles/stilts to decrease the possibility of damage to goods from flooding.

Food Preparation and Preservation Methods

Food preservation during a cyclone is a major challenge, given that electricity and water can sometimes be unavailable for long periods of time. There are multiple examples of iTaukei food preparation and preservation methods designed to reduce vulnerability to storms, such as the following:

- *Davuke*—A hole is dug near the house; the length of it depends on the amount of food to be stored (usually, it is a foot deep). It is then covered with the leaves of the plantain plant. Dried, peeled staple foods such as breadfruit, plantain, cassava, and many more are added on top of it. This is then again covered with plantain leaves (ideally, many leaves of plantain plants are added to prevent the soil from coming into contact with the food). Once the hole is covered with the topsoil, rocks are placed to mark the area. This method preserves food for months at a time with the occasional change of the plantain leaves.
- *Vesa*—Food is preserved by frying it without oil. Fish are cleaned by removing the scales and guts (staple foods such as breadfruit are not peeled) and then added to a hot plate or cooked directly above a fire. Once cooked, this type of preservation can last for up to two weeks.
- *Kitu*—A form of storing water by using empty coconut shells pulled together by finely tied coconut husks. Sugar cane, oranges, and mangoes can also be stored in this way.

DRR

Communities have been able to determine slow-onset hazards, such as droughts, by observing seasonal changes and lunar cycles. According to Nadzirah Hosen (2019), changes in the phases of the moon are indicators of when there will be extended dry seasons and when rain is expected.

Droughts have a significant impact on agronomical practices, particularly in areas that are dependent on one water source, such as rivers, streams, or wells. As an adaptation mechanism, communities have begun to utilize the dry seasons for land preparation because drier soils make for easier clearing and tilling. Communities also utilize traditional water storing and harvesting practices, such as rainwater harvesting directly into tanks; the planting of taro (which is a staple in most Fijian communities) in flooded pits/marshes to ensure a constant supply of moisture even during dry seasons; the construction of check dams across riverbeds; use of mangroves and wetlands as natural water reservoirs; and using bamboo pipes to assist in transporting water to required areas from sources (Lemi, 2019).

Wildfire Prevention

As an indirect impact of extended droughts, wildfires pose a significant threat to biodiversity and livelihoods. Although not as profound in Fiji, wildfires are a threat recognized by Indigenous communities globally, and TEK has played an important role in how people have dealt with this threat.

Traditionally, people in Fiji have utilized controlled burning to clear small, forested areas or overgrown land for agriculture, using traditional safeguards such as firebreaks placed at strategic locations to ensure these fires are controlled and managed. Traditional practices of sustainable logging have also ensured that diverse forest structures are maintained to reduce fire risks. This is done through the selection and strategic planting of trees that are significantly resistant (not completely) to fires (Ministry of Forestry, Government of Fiji, 2022).

Landslide Risk Reduction

Landslides in Fiji have been historically attributed to intense cyclones, though they can also be correlated with unsustainable agricultural and building practices. Presently, the Fiji government has multiple projects throughout the country that promote the planting of vetiver grass to prevent landslides in highly vulnerable areas; however, traditional practices that have been used for generations continue in other parts of the country.

Communities have addressed the risk of landslides by planting deep-rooted vegetation on slopes and hillsides to bind soil and prevent erosion. Houses that have been near high-risk areas have also used materials that have a higher degree of flexibility, such as wood and bamboo, so as not to break under stress. Villages have also been known to shift to areas historically known for having stable ground and away from unstable slopes (Drazbaa et al., 2018).

4.0 Traditional Early Warning System

4.1 Case Study 1: Traditional lunar calendar

The iTaukei people have for centuries used a calendar passed on by the elders. This is not only taught to children in primary everyday language classes but also passed down orally by elders. The traditional lunar calendar shows how elders navigate themselves according to the time of the month. Hence, the cyclone period is believed to be from November to April and often referred to as *vula I cagilaba* or Cyclone month (Tikoitoga, 2019). The traditional lunar calendar represents seasonal change and uses environmental indicators from the behaviours and growth of plants, root crops, and marine organisms to develop it further.

The traditional lunar calendar is basically the business plan for the elders, determining their day-to-day activities. For example, *gasau* (or reeds) is a "preparedness" sign for cyclones. According to the iTaukei calendar, these plants should begin to sprout in April and be in full bloom by mid-May. The belief held by the elders is "if the reeds sprout in May or as late as July, this is a sign of strong winds which will be upon us in either later in the year or as early as the following year" (Motonikumi 2017). Hence, the villagers work diligently through the *vula i Werewere* (weeding month: June–July), *vula i Cukicuki* (digging and planting month: August), and *vula i Vavakada* (watching the root crops grow bigger: September). By October, the elders are enjoying the fruits of their labour and tend to their farms with just the occasional removal of weeds. It is believed that during the month of February *(vula i Sevu)*, a first harvest of matured yams will be given to the gods (now to the church) in appreciation for the good year and blessings for the next (Vunibola et al., 2024).

4.2 Case Study 2: Traditional warning signs prior to Cyclone Winston

The most powerful cyclone ever recorded in the Southern Hemisphere was Cyclone Winston, which ravaged Fiji on February 20–21, 2016. Some communities that were affected by this severe cyclone mentioned that traditional signs provided the first and most reliable way of knowing that the cyclone was approaching. These signs covered a broad temporal spectrum of warnings, from months to weeks and even hours.

In a coastal village in the Province of Tailevu, the villagers started seeing signs 3 to 4 months before the cyclone. These traditional signs included hornets nesting close to the ground, five or more breadfruit on one stalk, extremely hot weather, and the curling of the central shoots of the plantain plant, which normally grows straight. One month before the cyclone, traditional fisherfolk noticed changes in the temperature of the ocean; the sea was very hot, and small fish were seen dead on the shorelines. One week before the cyclone, traditional warning signs included seabirds flying landward, and the birds *(manumanu ni cagi)* were flying very low compared to their usual pattern. One traditional sign unique to this village was the sound of their waterfall or *savu*. The waterfall roared like thunder that could be heard miles away, which confirmed to them that an impending cyclone or severe weather was coming. This went on for a whole week right before Winston.

These indications have helped communities over the years to prepare themselves well prior to a disaster—including stocking up on food and fresh water, tying down their houses, and shifting farm animals into sheltered spaces. For Cyclone Winston, however, these early warning signs only predicted the coming of a cyclone but not its strength, which speaks to the need to pair Traditional Knowledge with modern science and early warning systems.

4.3 Case Study 3: Community-based knowledge

Kundra et al. (2023) undertook a study in Nadaro village, located in the central eastern division of Fiji, to assess the Traditional Knowledge and practices of flood risk identification techniques used by the community. The study identified five categories of Indigenous flood forecast indicators: phenomenological, ecological, riverine, meteorological, and celestial. It elaborated that the traditional system of flood identification and early warning indicators had played a critical role in the community's preparation for flood hazards, saving both lives and livelihoods. After the community noticed the early warning signs—including a sudden increase in ants and centipedes in the village, an increase in the sounds of rivers and streams, water getting dirty and muddy, and the birds producing specific sounds—the village headman *(turaga-ni-koro)* walked around the village making a call announcement to warn the villagers and share the necessary information on evacuation with them.

Table 2 shows the results of the study as observed by Kundra et al. (2023) within Nadaro village. The table shows the categories (or types) of observations against the respective indicators.

Table 2. Categories and Indicators of Indigenous flood warning systems

Categories/identification	Indicator
Phenomenological	• Elderly felt pain in certain body parts • People felt pain in the knee • Sleepless nights for villagers due to rising temperatures
Ecological	• Noticeable and sudden increase in ants in the villages • Rise in the number of centipedes and insects • Birds were observed to make certain unusual sounds • Myna birds became aggressive and fought among themselves • Certain trees were observed to produce more flowers or fruits, such as breadfruit trees, which produced more than one fruit per branch
Meteorological	• Rise in rainfall intensity and duration, strong winds and increased humidity
Riverine	• Some villagers mentioned noticing a "halo" around the moon prior to floods
Celestial	• River water became muddy, and there was an increase in debris. There was a noticeable increase in the sound of the water.

Source: Kundra et al., 2023.

5.0 Looking Ahead

5.1 *Mana* and *sau* in iTaukei Spirituality

The first monolingual Fijian dictionary defines mana as "achieving its intended purpose" (*yaco dina na kena Inaki;* Tabana ni Vosa kei na iTovo Vakaviti, 2005). This sense of mana, hinted at in Hazlewood's third definition from 1850 ("so be it, let it be so"), is regularly made clear in iTaukei Fijian communities during ceremonial speeches. For example, during *isevusevu* (offerings of kava between guests and hosts), the speeches made by those receiving the presentation feature aspirational phrases such as "Let fish be abundant" and "Let chiefly authority be maintained," and those who have given the presentation often respond "Mana" to these lines.

Sau can be defined specifically as "chiefly power" (Eräsaari, 2013) or generally as "powerful and effectively influential to cause ill or good" (Tabana ni Vosa kei na iTovo Vakaviti, 2005). Sau also refers to individual chiefs and the way their instructions and plans to their people must be followed or else misfortune (accidents, sickness and so forth) will afflict those who have disrespected the chief's words.

In the context of climate resilience, the success of a chief in navigating the challenges both before and after cyclones is a testament to their capabilities as a leader. Actions within the villages on adaptation and DRR are heavily influenced by respective chiefs. From a biodiversity perspective, the chiefs also dictate whether the marine area surrounding their village (as custodians of this space) is open for fishing or to be designated as a taboo area, thus revitalizing species richness and ecosystem health.

Mana or Sau Misalignment and Its Loss in Today's Relocation Context

Consequently, Indigenous spirituality in Fiji holds that an individual's or community's notions of success, creativity, and fate are influenced by the unseen. Nothing happens as a coincidence or by mistake. There are norms, values, and relational aspects that must be constantly maintained, appealed, or aligned correctly in the unseen world before its consequence manifests in the physical world. When this is maintained, the mana or sau stands *(tu)* tall like a communications tower emanating positivity *(sau-tu)*.

If there is an imbalance or misalignment, negativity emanates. The negativity causes the sau to teeter, lashing out negativity called *sau-ti*. This negativity can range from simple malaise and physical and mental conditions to environmental catastrophes like droughts, cyclones, pestilence, famine, and deaths. Mana and sau are the iTaukei parallels to the Asian yin/yang notions of duality that are held by iTaukei people to impact both the seen and unseen world.

The iTaukei peoples have the right to self-determination. By virtue of that right, they freely determine their political status and freely pursue their economic, social, and cultural development, as per the United Nations Declaration of the Rights of Indigenous Peoples (United Nations, 2007, Art. 3). Spirituality is a universal value. iTaukei spirituality comes to

the fore during oratory at traditional ceremonies, where public declarations, reclaiming of kinship, and confessions of strength and virtue are the focus and are aimed at esteeming and foregrounding one another. The oratory reclaims resilience, success, and positivity. These traditional oratories are specific to the *vanua* and the people it empowers. It is essential for implementors of relocation to identify individuals who can effectively articulate traditional oratory on their behalf when interacting with a relocated or relocating community. This is an iTaukei right that is recognized in the United Nations Declaration on the Rights of Indigenous Peoples. Teaching and learning traditional oratory are crucial to preserving this important cultural practice.

5.2 Revitalization of TEK in Fiji

The Ministry of iTaukei Affairs is actively collaborating with stakeholders to revitalize TEK in Fiji. This work is driven by the iTaukei Institute of Language and Culture through its Special Revival Unity, which inter alia facilitates workshops on the revival of Traditional Knowledge and the expression of culture. Table 3 shows the numerous organizations and initiatives that the Ministry consults with and/or contributed to through translations, information sharing, and awareness raising to ensure that TEK is preserved in Fiji.

Table 3. Activities and partners of TEK revitalization in Fiji

Activity	Partner
iVakatakilakila ni leqa tabukoso/ draki veisua (Climate change and climate action)	Ministry of Environment and Climate Change and the Fiji Meteorological Service
Iwalewale ni maroroi kakana (Food security)	Multiple non-governmental and civil society organizations, as well as community groups and vocational colleges
Teitei (Agriculture)	Ministry of Agriculture
iTutu vakavanua (Governance structure)	Primarily done by the provincial offices which report to the Ministry of iTaukei Affairs
Vaivakamarautaki (Performing arts)	Various contemporary arts groups, mainly through Dulali
Wai vakaviti (Traditional medicine)	As traditional medicine has not been thoroughly tested, it is not encouraged by the Ministry of Health: however, the Fiji Museum and universities assist in preserving this knowledge.
iWalewale ni qoli (Fishing methods)	Ministry of Fisheries and respective non-governmental organizations

Note: The authors would like to clarify that there may be more work that the Fiji government is involved in to revitalize TEK in the country: the information used to write this section was based on a presentation by government representatives during a knowledge exchange event hosted by the Wildlife Conservation Society Fiji and International Institute for Sustainable Development in Fiji.

Source:

The Ministry works very closely with respective Living Human Treasures, provincial council offices, and other cultural agencies (including the Department of Heritage and Arts of Fiji, the Fiji Football Association, iTaukei Trust Fund Board, National Archives, and the National Trust of Fiji) for the implementation of the Cultural Revitalization Program.

5.3 Knowledge Conservation

Tikoitoga (2019) notes that the Ministry of iTaukei Affairs has made it their mission to ensure that this intangible repository of information is articulated and captured, particularly through their Cultural Mapping Programme, and this paper hopes to assist in this endeavour. Other organizations have also contributed to the safeguarding of TEK, with some taking a more engaging and interactive method. One such example is the Arts Village Cultural Center, which provides tourists with hands-on experience in weaving traditional mats and bure making. Although the purpose is more centred around tourism, the activity assists in preserving cultural heritage (Teel, 2009).

Academia has also played a critical role in studying and further explaining the crucial role of TEK in sustainable practices and DRR. Notable local institutions, such as the University of the South Pacific and Fiji National University, have dedicated multiple projects and funding toward the preservation of TEK in Fiji and the Pacific and continue to advocate on the critical role it plays in DRR and climate risk adaptation.

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