Journal of Interdisciplinary Research

http://pacificdynamics.nz Creative Commons Attribution 4.0

ISSN: 2463-641X DOI: http://dx.doi.org/10.26021/12511

# Beyond the air-conditioned boardroom: Bridging western and Fijian Indigenous knowledge in tourism research

#### **Dawn Gibson**

The University of the South Pacific

#### Sera Vada\*

Griffith Institute for Tourism

#### Patricia Bibi

University of the South Pacific

#### Nanise Masau

University of the South Pacific

#### **Bronwyn Powell**

Griffith University

#### **Apisalome Movono**

Massey University

#### Johanna Loehr

Griffith University

#### Lachlan Guthrie

Griffith University

#### Wade Hadwen

Griffith University

#### **Helen Johnson**

Griffith University

#### **Abstract**

The COVID-19 outbreak and increasing natural disasters have intensified concerns about effective water, sanitation and hygiene (WASH) practices in Fiji's tourism sector. Whilst Indigenous values and customs are recognised in tourism development, socially inclusive WASH research in the sector has inadequately addressed Indigenous cultural nuances, especially in Pacific communities. Drawing from the Fijian Vanua Research Framework (FVRF), a Pacific research methodology that incorporates Fijian values, relationship protocols, and ways of knowing, this research designed a culturally-sensitive and socially-inclusive methodology to respect traditional Fijian protocols, and examine hotel staff and host communities' WASH practices. The research identified differential access to, and gaps in, the provision of WASH, and provided guidelines for future change. This paper presents the challenges of, and the lessons learnt from, the application of the methodology to field research. The methodology provided invaluable intellectual detail, resulting in the development of contextually appropriate recommendations and tools, and strengthening long-term working relationships.

**Keywords:** Gender equality, disability and social inclusion (GEDSI); Fiji; indigenous knowledge; research methodology; tourism; water, sanitation, and hygiene (WASH).

#### Introduction

Tourism development "is a socio-spatial and socio-economic phenomenon" (Hartman, 2018:152) which transforms destinations into leisure and recreational spaces (Guzeller and Celiker, 2019). Tourism drives socio-economic development in Fiji; it is geographically dispersed, employs a significant number of women, is a substantial consumer of water, and is a source of solid waste and wastewater (Movono and Hughes, 2020). The COVID-19 pandemic and increasing natural disasters have triggered a keener focus on hygiene, cleanliness, health and safety for visitors, hotel staff and host communities.

Effective workplace water, sanitation and hygiene (WASH) services and practices are needed to support a sustainable recovery from Fiji's COVID-19 border closures, because tourists will demand trustworthy COVID-safe WASH practices in hotels and resorts. On 15 October 2020, Tourism Fiji launched the Care Fiji Commitment to offer destination-wide assurance that Fiji can safely welcome travellers. The enhanced safety standards include health protocols, tracing, a

<sup>\*</sup> Sera Vada is the corresponding author

<sup>\*\*</sup> This research project "Inclusive Stewardship for WASH (IS4W) (2019/899)" was approved by the Griffith University Human Research Ethics Committee.

COVID Action Plan and staff trained in COVID mitigation practices (Fiji Hotel and Tourism Association, 2021).

Effective WASH services and practices are integral to the revival of Fiji's tourism sector, but research methodologies examining WASH-at-Work often inadequately address Indigenous contexts, knowledge and cultural nuances. This project's methodology was specifically designed to be culturally-sensitive and socially-inclusive. While all members of Fiji's local communities are entitled to improved WASH services, some require consideration of their specific needs to ensure equality of access.

The concept of accessible and inclusive tourism (AIT) recognises the needs of women and adolescent girls, pregnant women, gender diverse people, people with disabilities, the elderly and children (Liasidou et al, 2018). AIT involves "collaborative processes between stakeholders that enable people with access requirements, including mobility, vision, hearing and cognitive dimensions of access, to function independently and with equity and dignity through the delivery of universally designed tourism products, services and environments" (Darcy and Dickson, 2009:34). Past studies have examined the accessibility of tourist destinations for children with disabilities and their families in Romania (Tecau et al, 2019), Spain and Australia (Vila et al, 2015). AIT is beneficial because it can combat 'seasonality' and increase occupancy rates, due to tourists travelling outside the high season, in groups or with family, and for longer durations (Machado, 2020). Nonetheless, existing tourism spaces can remain dominated by male and Western preferences, requiring female and non-Western travellers to navigate gender and safety risks (Yang et al, 2017).

Existing WASH-at-Work frameworks (UNICEF, 2019) consider employers' roles in providing access to WASH services at work, and training to safeguard staff. They advise how businesses can ensure WASH services (such as water supply systems, sanitation and waste management services) in supply chains and within surrounding communities. They expand established hotel standard operating procedures focused on food and personal hygiene to address specific business sector needs. Tourism businesses profit from destination-wide benefits through investment in WASH via increased productivity (WaterAid Canada, 2017), improved social license to operate (USAid, 2017), and increased financial sector investment in environmental, social and corporate governance opportunities.

WASH-at-Work programmes can improve social inclusion when combined with the wider adoption of adaptive, locally-generated, problem-solving approaches that recognise and validate Indigenous knowledge (Eversole, 2012). When allied with the concept of gender equality, disability and social inclusion (GEDSI), which ensure that women, people with disabilities and the socially vulnerable are part of decision-making processes about water access and allocation, hygiene, the provision of sanitation infrastructure, and natural disaster management, genuinely 'Inclusive' WASH-at-Work programmes can be designed (Johannessen et al, 2014).

GEDSI acknowledges the need for gender equality and the empowerment of women, as a human right and a Sustainable Development Goal (SDG) #5 (United Nations, 2015) that helps to drive economic growth, development and social stability, as a valuable component of risk and impact management, and because the Pacific region generates significant challenges to gender equality and women's empowerment (DFAT, 2016). GEDSI prioritises the human rights of people with a disability by working with them, their representative organisations, and partners (Kompak, 2018:2) and extends human rights to 'social inclusion', incorporating youth and children, the elderly, gender diversity, and cultural, ethnic, and religious minorities (Reichert, 2011).

Tourism assists 'development' by providing direct and indirect employment to an estimated 118,000 people (IFC, 2020); in early 2020, tourism contributed an estimated 17% to Fiji's GDP. According to the National Fijian Tourism Development Plan, tourism has been the source of both national and familial income due to its capacity to provide skilled employment; it supports, on average, one-third of Fiji's total labour force (IFC, 2020). Although tourism has contributed to poverty reduction, commitments to ensure that development leads to improved WASH for all in tourism destinations range from informal to non-existent. The literature is skewed towards water resources and conflicts at the expense of WASH, while behaviour and Government strategies have not considered how GEDSI intersects with existing WASH services to contribute to sustainable tourism. In contrast, an Inclusive WASH-at-Work programme, generated with and for the tourism sector and local communities, and supported by Government, can promote socially-inclusive WASH access and services within hotels and surrounding tourism operations, enhance knowledge of effective hygiene practices across the whole-of-workplace, and improve awareness and behaviours for all members of local communities in a culturally-sensitive manner that addresses their needs.

Initiatives that acknowledge and incorporate Indigenous peoples' world-views and institutions in all aspects of the water management cycle are needed to inform sustainable tourism (Jimenez et al, 2014). While Indigenous values and customs are recognised in tourism (Scheyvens et al, 2021), Inclusive WASH research in the tourism sector has inadequately addressed Indigenous contexts and cultural nuances, which also act to inspire sustainability in Indigenous tourism enterprises, advance SDGs (United Nations, 2015), and inform resilient development for Indigenous communities (Hutchinson et al, 2021).

The methodology was tailored to Indigenous contexts because many Western research methodologies have not been adapted to effectively conduct research with Pacific communities. To successfully provide Inclusive WASH-at-Work programmes, stakeholders' broader sociocultural systems must be considered (using a culturally-sensitive and socially-inclusive methodology) (Jimenez et al, 2014); here the Indigenous cultural contexts in which people are included as equal actors in the research process inform the design of WASH programmes (Movono et al, 2017).

This paper presents an overview of tourism in Fiji, a literature review relating to WASH programmes, and an outline of the 'decolonisation' of Pacific research design and practice. It discusses the ways in which research methodologies can be tailored to suit the tenets of a Fijian research framework. The paper describes case study areas where research was conducted, the culturally-sensitive and socially-inclusive methodology that was employed, and the challenges encountered and the 'lessons learnt' from the field. It concludes with some recommendations that may assist future researchers in Fiji. This can be read in tandem with the research report<sup>1</sup>, which details the data and findings.

# Literature Review: Tourism and WASH, 'decolonisation' of research, and tailoring a Fijian research framework

#### **Tourism and WASH**

The COVID-19 pandemic, and its consequences such as international travel bans and reduced tourist activity, have triggered devastating economic impacts on Fiji, pushing the country into a negative gross domestic product (IFC, 2020). The increase in natural disasters, including severe cyclones in late 2020 and early 2021, has exacerbated existing social and health vulnerabilities, and threatened tourism sustainability through its impacts on water quantity and quality. While large hotels and resorts act as anchor investments in destinations, most services are provided by micro-, small- and medium-sized enterprises and village communities that depend on tourism for their revenue (IFC, 2020). As the tourism sector moves to address development challenges and to attract international visitors, research is required to enhance the understanding of, and more effective implementation of, Inclusive WASH in tourism. An innovative approach that supports the inclusion of hotel staff and all members of host communities, plus more effective coordination between stakeholders, can work to ensure sustainability and enable tourism's stronger emergence from COVID-19 (UNWTO, 2019).

The successful provision of Inclusive WASH services and practices recognises the social complexity of community participation. Previous tourism research has examined GEDSI via the inequality of its embedded, gendered, power relations (Duffy et al, 2015; Ferguson, 2011), the differential impacts of tourism on women and men, and the gendered impacts of tourism in relation to WASH and/or water (Cole et al, 2020; IASC, 2018; World Bank 2010).

WASH services provided by, and practices learnt in, the workplace can influence host communities by the adoption of practices absorbed from social exchanges between local people, tourists and the tourism workplace (Warren et al, 2016). Yet Indigenous Fijian communities are complex, multifaceted, interrelated and mutually affective socio-ecological systems which, over time, are subject to multiple adaptive cycles to which people continually adjust to cope with

<sup>1</sup> The report is located at <a href="https://www.watercentre.org/wp-content/uploads/2021/03/FINAL-IS4W-FR-Case-Study-Summary-Fiji">https://www.watercentre.org/wp-content/uploads/2021/03/FINAL-IS4W-FR-Case-Study-Summary-Fiji</a> v5-17-March-2021.pdf

development changes. Residents are active participants who are aware of emerging changes, and purposefully adjust to tourism-related developments (Movono et al, 2017). Despite people's adaptive agency, there are operational, structural and cultural limitations to community participation in tourism development, generated by minimal to no consultation with local community members in agreements established within the private sector of foreign investors and/or local élites (Saufi et al, 2014).

#### **Decolonising Pacific research**

The growth in aid-funded projects in the Pacific has increased the prevalence of multicultural teams of professionals conducting research in communities with differing cultures, values and social norms (Goforth, 2020). However, Western research methodologies require significant critical reflection and adaptation if they are to be relevant to Pacific communities. 'Decolonisation' of research methodologies has been defined as a progressive process to undertake research with Indigenous communities that positions "indigenous voices and epistemologies in the centre of the research process" (Smith, 1999:2). 'Decolonisation' requires researchers to develop the skills to be critical of their own 'gaze', to reflect on the situational 'truth' of their own interpretations, and to acknowledge the potential for alternative explanations and ways of knowing to be marginalised (Thambinathan and Kinsella, 2021). Imperial and colonial representations shape the researcher's 'gaze' to dominate, in turn, the ways that Indigenous knowledges are represented. Yet the concept of 'decolonisation' should not be used as a "substitute for 'human rights' or 'social justice' but as a demand for an inclusive indigenous framework, indigenous sovereignty and indigenous ways of thinking" (Datta, 2018:1).

Many previous research approaches to health, social and economic development in the Pacific have been dominated by Western conceptual frameworks that fail to accurately reflect the diversity of cultural knowledge, beliefs and practices within the region (Cammock et al, 2021). In tourism research, critical voices emanate primarily from Western scholars with limited engagement with Indigenous and local peoples and epistemologies in the co-creation of tourism knowledge (Chambers and Buzinde, 2015). There is an historical pattern of theorising, data collection and knowledge creation established by 'outside' researchers on Pacific people, whereby the researchers become the tellers of the stories of 'the researched' (Vaioleti, 2006). Indigenous researchers can bridge such gaps. The process of 'decolonising' knowledge includes challenging notions that assume Western perspectives are universal, that Western methods are 'objective', and that human experiences within Western contexts are core whilst de-centring other cultural perspectives (McNamara and Naepi, 2018). 'Decolonising' research prioritises and re-centres the voices of Indigenous communities, particularly in the tourism sector which, while it is based on a Western business model, can be managed beneficially via partnerships. 'Decolonising' is critical to research that directly impacts local communities, or aims to generate beneficial outcomes for local people, such as Inclusive WASH in tourism. Consequently, the development of researchers' capacities in Pacific countries must open spaces within communities to critically engage with what is 'Pacific' or 'Indigenous' about their research methodologies and methods, and how they might differ from others (Suaalii-Sauni and Fulu-Aiolupotea, 2014). Within academic research, for example, 'decolonising knowledge' can refer to restoring Indigenous worldviews and pedagogies, building bridges between Western and Indigenous research methods, and ensuring academic peer reviewers and publishers provide hospitable conditions that enable Indigenous scholars' voices to be heard (Movono et al, 2020).

From a basis of critical reflection, researchers can design methodologies to enable the alliance of multicultural team members to combine their knowledge(s) to create bridges that produce positive outcomes for local communities. In this project, facilitated by their already-established relationships with hotels and local communities, the researchers designed, then applied, a culturally-sensitive and socially-inclusive methodology which required immersion and engagement through close, long-term interaction with people to learn about, and to understand, their beliefs, motivations, and behaviours (Palmer, 2005). COVID-19, low tourism numbers, and an initial lockdown in Fiji required and enabled data to be collected over time, in discrete activities.

#### Tailoring a Fijian research framework to the project's methodology

Due to its focus on Fijian Indigenous society, its potential to decolonise research, and its localised research methods, Nabobo-Baba's (2008) Fijian Vanua Research Framework (FVRF) was adapted to ensure that Indigenous Fijians could participate in decisions, processes and methods relating to which data were collected.

The FVRF reinforced the culturally-sensitive and inclusive methodology by valuing the socio-cultural context within which research was conducted. *i-Taukei* culture is a hierarchical 'hereditary chief' system in which chiefs and elders are respected community leaders possessing ultimate authority and power (McCarthy, 2011). As Gibson explains, "where there is strong leadership, respect is mutual between chiefs and their people" (Gibson, 2014:155). Within the system people have responsibilities while chiefs, who are predominantly male and elders, "serve and give leadership" (Niukula, 1995:24). This benevolent autocratic/paternal relationship is widely socially accepted and structures many Fijian organisations (Gibson, 2019).

Nonetheless, significant power differentials exist within the two main ethnic cultures of Fiji (*i-Taukei*/Indigenous Fijian and Indo-Fijian), and the existence of "unequal distribution of power within [South Pacific] institutions and society is generally accepted" (Saffu, 2003:64). For example, in some Pacific societies mature entrepreneurs are often well-established members of the local community and are more likely to receive the respect and status necessary for their business to function profitably. Gender norms and stereotypes that perpetuate socio-economic inequality also are deeply embedded in Fijian society. Despite unprecedented gains by women in education and access to jobs many continue to cluster in sectors characterised as 'female' and in low-paying occupations (Chattier, 2013). Notwithstanding such inequalities, support for the design of a socially-inclusive methodology is provided by the Fijian Government's acknowledgement of existing socio-cultural, political and economic challenges to gender equality and social inclusion

via the National Gender Policy, which aims to improve the quality of life of all women, men, and children through the promotion of gender equity and equality (Fijian Government, 2014).

In addition to Government policies, contemporary *i-Taukei* culture has two further key influences: the Church, and the *i-Taukei* community or *vanua* (Niukula, 1995). The term *vanua* has physical, social and cultural connotations in relation to members of a group who co-relate socially, politically and culturally (Overton, 1999), and refers to the land area with which a person or group is identified, together with its flora, fauna and landscape. *Talanoa*, as the process where two or more people converse, share ideas and stories (Movono and Becken, 2018), is valuable to methodological design because it is a popular and preferred means of communication that embodies Pacific traditions and protocols and can be adapted to Western semi-structured interview techniques as a culturally-appropriate research method in Pacific contexts (Farrelly and Nabobo-Baba, 2014).

The FVRF follows protocols in planning, seeking permission from the *vanua*, *talanoa*, appropriate gift giving, and reporting back, practices which collectively all contribute to forming a lifelong connection between researcher and researched (Nabobo-Baba, 2008); and they enhance the benefits to members of local communities who have offered their knowledge to 'outsiders'.

The team comprised Australian colleagues based at Griffith University in Brisbane, Australia and Fijian colleagues as researchers from the University of the South Pacific in Suva, Fiji. The Fijian team became essential to data collection, pragmatically due to international COVID-19 travel bans, and methodologically due to their knowledge of the *i-Taukei* language and the cultural sensitivities of research in Indigenous communities. The research team considered the capacity building required to incorporate Indigenous knowledges into preliminary project design and how, by 'decolonising' the research process, hotel staff and local community perspectives could be made central to data collection (Cochran et al, 2008; Datta, 2018). The team learnt that while a methodology combining the FVRF framework and *talanoa* sessions with qualitative Western methods required time and budget, it enriched the research findings, supported context-specific analysis, and created detailed knowledge in response to research questions (Molina-Azorin and Font, 2016). Session outcomes enabled communities to feel validated, provided opportunities to discuss the issues and challenges which they require hotels/resorts and Government to address, and presented recommendations for inclusion in reports and discussion with other stakeholders.

Figure 1. Fiji Vanua Research Framework adapted from Nabobo-Baba (2008, p.146).



Figure 1. Fiji Vanua Research Framework adapted from Nabobo-Baba (2008, p.146).

#### The research sites – Suva and the Coral Coast, Viti Levu

Suva, and the Coral Coast on Viti Levu were chosen as the project's case study areas because tourism is economically vital, there are many operators of multiple scales, WASH-related health issues exist, and the Fijian team had conducted previous research in, and maintained enduring relationships, with the communities in those locations.

The capital of Suva, located in Viti Levu (Central Division), is the administrative hub where government decisions regarding policies, regulations, and management of natural resources are made. As Viti Levu and Vanua Levu are the largest islands and main economic bases of the archipelago, their societies provide income stability and, consequently, the majority of the Fijian population has settled there. Most Central Division land is owned by Indigenous communities, divided according to their traditional social hierarchy (Naidu, 2013), and partially leased for agricultural or tourism purposes.

Development of the southern Coral Coast was initiated by construction of the Queen's Highway in 1942 by the United States' Army. In 1952, Fiji's first resort was constructed in Korolevu, with the Warwick Resort in 1972; both neighbour the village of Votua. The Naviti Resort (at Votualailai) in 1974 followed, and then the Tambua Sands and Hideaway resorts were established in the 1980s. The operation of major hotels and resorts has stimulated the establishment of small-scale tourism businesses such as backpacker accommodation, ecotourism experiences, dive centres and home-stays. Prior to COVID-19, the Coral Coast was Fiji's third most visited destination (an estimated 303,000+ international visitors annually) and was home to 40 licensed

establishments (Fijian Government, 2019). Tourism is perceived as the Coral Coast's lifeblood as it has contributed to local communities' development through employment, land lease benefits and tourism related activities (Kado, 2007). However, tourism has also been a factor in some of the negative socio-cultural changes such as cultural commodification and alterations in social structures and relationships within its districts (Samy, 1980).

The Fijian researchers, in consultation with their Australian colleagues, engaged in an extended period of research in two case study areas. Case studies are valuable in qualitative research to study specific issues or contexts in detail (Stake, 2000:435). Past case studies on Vatuolailai village (Movono et al, 2017) and Wakaya Island (Gibson, 2019) have provided rich data through "an analysis of the context and processes involved" in evaluating the challenges for Indigenous budget tourism operations in running successful businesses (Hartley, 1994:209), and in studies of organisational behaviour, community studies, business, and marketing (Xiao and Smith, 2006). However, case studies can also be limited by time, budget and labour constraints, and difficulties in gaining and maintaining access to an organisation such as a hotel or resort and its employees (Hartley, 1994).

## Bridging western methodologies and Fijian Indigenous knowledges in tourism research

To examine how Fijian hotels and resorts can contribute to sustainable tourism development through the provision or improvement of Inclusive WASH-at-Work and in communities, Western qualitative data collection methods such as key informant semi-structured interviews, focus group discussions and Q-Method were combined with a methodology informed by the FVRF. Q-method provides useful information in critical tourism research concerning the exploration and comparison of subjectivity (Lee and Son, 2016). Q-method identified the values and significance stakeholders allocated to factors influencing a tourists' choice of a hotel such as environmental and social sustainability, social inclusion; hotel brand, value, facilities; location and local experiences; safety; and WASH impacts on surroundings and guests.

Qualitative methods were adopted to gain insights into the implicit reasoning and motivation for human and organisational behaviour and to ensure a detailed description and analysis of the WASH needs, interests and concerns of different hotel/resort staff and local communities. The methodology integrated GEDSI into data collection because it is consistently revealed as a critical cross-cutting element for improving access to WASH, for the effective realisation of water as a human right (GWA, 2019; WfW, 2019), and to ensure GEDSI data were integrated into a tailored Inclusive WASH-at-Work framework.

The research drew from relationships the Fijian researchers had with host communities that had been established through previous studies in Suva and the Coral Coast at seven resorts, plus five local communities - *Suvavou* and *Naivikinikini* in Suva, and *Votualailai*, *Korotogo* and *Yadua* on the Coral Coast.

Data collection was undertaken during January - October 2020. This included semi-structured interviews with hotel staff and villagers, and community *talanoa* sessions to prompt discussion about themes that included demographics, health risks, water supply, hygiene and sanitation practices, water management, policy and government regulations, knowledge and empowerment, and COVID-19. There were equal numbers of women and men, and data was disaggregated by gender, age and disability. People were observed "across the different settings that make up their life worlds" (Van Maanen, 2006:15), at the hotel/resort (as work site) and the village (as social environment) to understand their ways of being from an 'insider' perspective (Tedlock, 2000:457).

Recognising the importance of *talanoa*, as a culturally-preferred mode of engagement, to share knowledge and discuss personal and social issues, was crucial to successful data collection. In gathering and talking informally whilst drinking *yaqona* (kava) around the *tanoa* (kava bowl), *i-Taukei* became more open and spontaneous in their responses (Gibson, Pratt and Movono, 2012), their participation became voluntary and potentially empowering and they were supported to form partnerships to identify problems, needs and prospective assistance.

The FVRF informed the combination of qualitative research activities with *talanoa* to bridge Western and Fijian ways of knowing. Centring Indigenous Fijians supported their 'voice(s)' being heard and sharing of their local knowledge in ways that respected their cultural contexts. The culturally-sensitive and socially-inclusive methodology was maintained by meeting traditional protocols (which ensured the respect, safety and protection of the Fijian researchers), creating rapport with local communities, and developing a relaxed and friendly environment that placed people at ease and encouraged their participation.

#### Lessons from the field

A number of lessons emerged through the process of designing a culturally-sensitive and socially-inclusive methodology and undertaking field research.

### Culturally-sensitive and socially-inclusive project design, planning and implementation

In terms of project design, planning and implementation, a vital factor was the acknowledgment of the time and budget that was required at the commencement of the project, to ensure that the consultation process was culturally-sensitive and socially-inclusive. The team scheduled and budgeted for a six-month inception period, which was used to consolidate cross-border team working protocols and to establish and strengthen relationships with research assistants, key government stakeholders, hotel and resort operators, and local communities. Fijian Government and Australian University ethical approvals were obtained. Due to travel restrictions the Fijian team was tasked with full responsibility for data collection.

#### Lessons learnt by the Australian team

As research in Fiji is often donor-funded, it is encumbered by the constraint that it is led by international researchers. In this project the Australian researchers learnt from the Fijian team that it was important to agree on communication protocols (e.g. identifying communication channels that worked effectively for all team members), regular team meetings where time was allocated for field researchers to debrief, i.e., share experiences, observations and knowledge gained through informal conversation, and provide opportunities for all to express their expectations around responsibilities, capacity building, needs and opportunities, and authorship of publications. As half the team was unable to travel, due to restrictions from COVID-19, open communication about how the Australian researchers could support in-country team members (without having their contextual knowledge) was established. In addition, workshops were held to provide regular updates and validation of findings to top-level decision-makers and feedback to local communities, and a budget for costs was allocated.

To overcome research fatigue, i.e. where communities have been 'over-researched' and are tired of 'talking' about their problems to researchers, particularly where previous projects have failed to deliver tangible outcomes, meetings and workshops were arranged by Fijian partners with government stakeholders, hotel managers and village leaders during the inception period, to obtain their input about what they required from the research. There was positive feedback from community participants and appreciation for consulting with them during the inception period.

"Thank you for choosing us as your case study. We like it when you come and include us. It helps us when we learn from you and you let us share our culture and what we know." (Village Elder Male)

Participants' expectations were managed by explanations of the research focus, highlighting expected outcomes, and minimising 'promises'. The community participants stated that the consultative process provided a platform from which to raise their WASH issues.

"Such research provides us the opportunity to raise issues and challenges concerning WASH which your team can raise to the relevant authorities." (Village Elder Female)

The inception workshop in Suva clarified the research aims, which were to work with hotels to create a tailored Inclusive WASH-at-Work programme that these hotels could enact via their Corporate Social Responsibility programmes, or in communities in partnership with the Departments of Education and Health.

Financial incentives were not provided, because they could skew the research findings by participants telling researchers what they want to know (Gibson, 2014). However, in villages, 'gifts' of *yaqona* and offering hospitality to participants by payment for catered lunches prepared by local women's groups from fish and local farm produce were acceptable, ethical and appreciated.

#### Respect traditional protocols and customs

When conducting research in an Indigenous Fijian village, it is critical to be aware of and respect traditional protocols and customs that include hospitality. Although they may be perceived as time-consuming and costly, protocols are required to gain access to the community, while customs offer an opportunity to learn about stakeholders and their local contexts in detail, establish or consolidate relationships, and to show respect to communities. By taking these actions, communities become more willing to support research.

To arrange the meeting with the clan chief, the researchers contacted the *Turaga-ni-Koro* (village headman), who then contacted the chief's *matanivanua* (chief's spokesperson), who then spoke to the chief. This protocol shows respect for the *vanua*, for which Indigenous Fijians have a special relationship, framed by a holistic worldview which sees humans connected with the environment rather than separate from their land (Ravuvu 1983:70). Given their dependency on, and interconnectedness with, the environment, they grow up caring and protecting their *vanua*. *I-Taukei* abide by *vakavanua* (the ways of the land) and see their community as a key component of their identity (Nainoca, 2011). Villagers feel a sense of responsibility and stewardship for their environment, which they consider precious, and important for their survival (Gibson, 2014), a practice called *mamaroroi* or *maroroya*. Village children are taught to take care of their *vanua*, family, resources and environment for the future.

Upon visiting Suvavou and Naivikinikini in Suva, and Votualailai, Korotogo and Yadua on the Coral Coast, the researchers presented their *i-sevusevu*, (gift) of *yaqona* roots (*piper methysticum*) to request permission to enter the village, outline the research and conduct *talanoa* sessions. The team obeyed the village dress code of *sulu* for men and *jaba* (traditional *i-Taukei* dress) or long dress with sleeves for women. No sunglasses were worn, and caps, backpacks and handbags were carried rather than worn over the shoulder.

As it is considered rude to start interviewing directly following the *i-sevusevu* and to leave immediately after research has been completed (Nind, 2014), adequate time was allocated to gaining entry and familiarising the team with the location and participants. Following the ceremony, initial *talanoa* began, to make introductions and identify any traditional links by birth. Following the *i-sevusevu* and initial *talanoa*, a few days were spent becoming familiar with the village, its people, and the resort managers, and preparing for the interviews. *Talanoa* sessions were conducted with the villagers whilst sitting on mat-covered floors. Lunch was offered, prepared by the village women's and youth clubs and funded by the research team.

It is important to enable each community to cater food. Catering for *i-Taukei* communities is complex as Indigenous Fijian clans have *i-cavuti* (totems) that represent where they come from and their role within the greater *i-Taukei* social structure (Gibson, 2014). Early Western writings about Fiji show that Indigenous Fijians used a system of totems in the form of a plant, seafood or fish, and, in some cases, an animal, which cannot be eaten by the clan or tribe to which they belong

(Barr 1999:8). Many *yavusa*<sup>2</sup> still venerate a bird (e.g. kingfisher, pigeon, heron), an animal (e.g. dog, rat, or even man), a fish or reptile (e.g. shark, eel, snake), a tree (especially the *nokonoko*<sup>3</sup> (ironwood), or a vegetable, claiming one or more of these as specifically their own, and refusing to injure or eat them. It is probable that each totemic group originally recognised a complete series of three totems: *manumanu* (living creature, whether animal, bird or insect), *ika* (fish) ... and *kau* (tree) (Derrick, 1957:13). In the present, great respect is paid by elders to the principal totems; the tree totem must not be cut, except to procure its leaves or branches as a personal decoration in dances; the animal totem might not be eaten without incurring death or the anger of the spirits. While younger generations are less particular, they retain a respect for the animal totem. Strangers passing through the territory of another tribe may not eat the tribal totem and are strictly forbidden to mention its name aloud.

On completion of the *talanoa* session an *i-tautau* is presented to request permission to leave. The team learnt that respecting and complying with Fijian communities' protocols and customs created increased willingness to expend the time needed for rich data collection, provided detailed, candid answers, and assured villagers' inclination to participate in future research.

#### Value Indigenous researchers' ethnicity, knowledge and lived experience

The complexity of Pacific societies can provide a rich context to understand communities' ability to adapt to tourism development. Western researchers can learn from Indigenous studies that describe the importance of recognising Indigenous knowledges and adapting methodologies to local contexts (Movono et al., 2018). Methodologies adapted to each country's differences in language, dialect, traditions and totems enable researchers to appreciate local people's perspectives and to valorise them within a Western social science framework (Jackson, 2004: 34).

Through some previous research with Indigenous Fijian people, strong relationships between researchers and community members have been established. A study of the Naviti Resort on Fiji's Coral Coast for example, examines how "the development of the Naviti Resort, a water catchment dam, a causeway and a man-made island have created substantial changes in totem associations, livelihood approaches and traditional knowledge structures within *Vatuolailai* village" (Movono et al., 2018:.451). Gibson (2014) examines the cultural challenges of Indigenous-owned budget resorts in the Yasawas, suggesting that for success, introducing culturally-accepted limits should enable entrepreneurs to meet their broader social obligations.

Key informant interviews for this present project included *talanoa* and *veivosaki-yaga* (worthwhile discussion) sessions with managers, hotel staff and communities. *Veivosaki-yaga* was a culturally-appropriate Indigenous research approach to data collection (Tagicakiverata and Nilan, 2018), because it uncovered in-depth understanding of locally significant WASH issues. As stated by one informant:

<sup>&</sup>lt;sup>2</sup> Largest social unit for indigenous communities, usually comprising several *mataqali* (land-owning unit). Direct agnate descendants of a single *kalou-vu* (deified ancestor).

<sup>&</sup>lt;sup>3</sup> Native form of beach she-oak found on coastal areas and low hills in the Yasawas.

"The village has traditional flowers that could be used a deodorant or perfumes e.g. senicevuga, a white flower, uci, mokosoi or makita" (Elderly male)

Worthwhile discussions were held by the team leader with village elders, with the informal *talanoa* sessions being conducted by research assistants. In Fijian society respect is given to elders (Niukula, 1995); respect was accorded the team leader due to her age and status as a *qase ni vuli torocake* (university lecturer), which gave her access to male village elders (Gibson, 2014).

In Fiji, the vanua is structured into yavusa (different social units), consisting of people from the same village and comprising a matagali (land-owning unit), which has, in turn, a number of tokatoka (clans) (Ravuvu, 1983). While the Fijian research team hold similar "values, perspectives, behaviours, beliefs and knowledge of his/her indigenous/cultural community that is under study" (Greene, 2014:3), in Fijian social systems everyone is related, but their relationships are based not on knowing each other but where they are from. As one of the research assistants is an i-Taukei with paternal and maternal links to the Province<sup>4</sup> of Rewa, during introductions in the community and to staff at the hotels and resorts, she would present herself by name and her birth province. The interviewee/participant then would identify with her as their kai (i.e. whether they were from the same province of Rewa, Nadroga, which includes the Coral Coast, or from other provinces within the same confederacy<sup>5</sup> of Burebasaga), tauvu<sup>6</sup> (traditional siblings) or naita and were thus instantly at ease, and sharing information because of the traditional links that had been established. People who address each other as *naita* are from different areas and share a mutually jovial relationship (Veitayaki, 2002). Time-honoured connections are rekindled, establishing affinities and allegiances which augur well for interviews to follow. Such knowledge of local culture and dialects is important when negotiating access to communities and undertaking research, even where the respondents speak English. Tauvu relationships usually involve mild, friendly jokes and exchanges which vary in intensity based on the existence of a shared traditional history.

People from the provinces of Tailevu, Lomaiviti and Naitasiri considered her *naita* and would engage in *naitabani* (traditional banter performed among clans from her birth location). Their established relationships improved villagers' willingness to participate in discussions. Being *i-Taukei* and understanding the local dialect helped, as English terms were translated into the *Bauaun* dialect (considered Fiji's *lingua franca*) (Pawley and Sayaba, 1971), and then translated for the interviewee/participant into their local dialect, thereby supporting their understanding of information sought and questions asked.

<sup>&</sup>lt;sup>4</sup> There are 14 Provinces in Fiji excluding the island of Rotuma.

<sup>&</sup>lt;sup>5</sup> The 3 confederacies in Fiji include Kubuna, Tovata and Burebasaga.

<sup>&</sup>lt;sup>6</sup> Relationship between two groups with the same ancestral Gods and origin. The relationship allows them certain privileges and to engage in privileges of appropriation, coarse joking and ill-mannered banter called *veitauvutaki* (Hocart, 1913:101).

The second research assistant was from the province of Cakaudrove of the Tovata confederacy, whose traditional relationships with communities along the Coral Coast (Nadroga Province) are that of *Dreu* (similar to siblings). When she introduced herself, and mentioned her province, the host community members reciprocated her greetings with cheerful, hearty repartée, which is usually accorded family members whom they have not met in a long time. Their relationships and exchanges guarantee that people help each other (Veitayaki, 2002) and set the tone of the research, because the participants are placed at ease, and share 'from the heart'. The *talanoa* sessions became casual interactions in which she led discussions with thematic statements, enabling the flow of conversation, shared jokes about Nadroga's proficiency at rugby and the suitability of their men as husbands given that they are more sophisticated because of their years of mixing with tourists. There were jokes about men in the area being too involved with rugby, most women employed in tourism, thus leaving hardly anyone to undertake community work such as WASH.

The team leader is a Fijian *kailoma* (citizen of mixed race) with a detailed understanding of Indigenous *i-Taukei* culture. Her Indigenous Fijian ancestry is from Rotuma and Ra, both part of the Kubuna Confederacy (Veitayaki, 2002). The different relationships and her elder status established trust, provided ease of access to the variously related communities, and respect based on age, social rank and gender (Nayacakalou, 1978: 15). As a tourism and hospitality academic and traveller she had gained broad knowledge of tourist behaviour, expectations, and motivations, an 'insider' perspective that facilitated winning participants' trust, and a detailed grasp of community members' perspectives through participant observation and similar lived experience.

The team also learnt that researchers who are not Fijian and do not have paternal or maternal links to research sites can work with local Ministries, universities, communities and, in Fiji, the Ministry for *i-Taukei* Affairs is able to provide them with relevant local contacts and experienced research assistants.

#### Ensure sensitivity to i-Taukei culture

Several challenges arose during the field research, which required a sensitive approach to culture:

- Ensuring people attended pre-arranged meetings. Meetings were arranged through the *turaga ni koro* (village headman) with announcement of the meeting delivered at least two weeks prior at the weekly village meeting.
  - While it was helpful to be flexible and allow an hour or two for the start and ending times of meetings and *talanoa* sessions, it was important that the research team arrived on time and did not show impatience. If lunch was planned for 1.00pm, it could begin at 2.00pm due to unexpected events such as the late departure of a school rugby team billeted at the local community hall.
- Adapting to COVID-19. COVID-19 stimulated an increased level of interest in WASH and tourism research because it was having a severely negative economic impact on Fiji's tourism

sector, with closure of 50% of hotels/resorts and others operating with reduced staff (IFC, 2020). When meeting with hotel managers, supervisors, staff and villagers to explain how Inclusive WASH may prevent disease and promote health and hygiene, examples such as reduction in cases of diarrhoea, transmission of colds, influenza and (potentially) COVID-19 were given, which piqued participants' interest. Some elders saw a potential to increase their influence, as one said:

"COVID-19 has been good as it has made our people go back to farming, fishing and adopting traditional lifestyles." (Village Male Elder)

• Ensuring data were disaggregated by gender, disability and age. Consultations for women and men of different ages were held separately in hotels and communities and were seen as beneficial. The following statements illustrate this notion:

"This GEDSI WASH project is important for our health and the safety of our people." (Village Male Elder)

"Research refreshes practices of healthy living, hygiene and sanitation in the home and village." (Village Elderly Female)

"Glad the group is representative of women who don't work but live in the village as we can also contribute to issues of WASH in the community." (Village Elderly Female)

Discussion commenced with the expression *vosoti au* ('excuse me for asking'), or 'I'm sorry', when asking about a potentially embarrassing or sensitive topic. All findings were numerically-coded and password protected to guarantee anonymity, and no raw data were available to incountry government personnel.

From the disaggregated data the team learnt that women and girls had differing access to WASH services, i.e. women's WASH requirements were taken for granted. One informant explained:

"Women are expected to take care of their own menstrual hygiene needs." (Village Female)

Participation in WASH decision-making within the community was limited for women and youth, with power in the hands of sometimes autocratic male elders, as mentioned by one informant:

"Women attend weekly village meetings but men ignore women's issues." (Village Male Elder)

Women reported working long hours for little reward, then performing their expected family duties on return home from work. A younger informant told the researchers that:

"It would be good if those ladies working in the resorts/hotels could hold sessions of personal hygiene and basic housekeeping for the ladies in the village." (Village Youth)

A village elder, whose wife worked at a resort, when asked if women brought home the training they had learnt, responded:

"Our women work mainly in housekeeping. They clean the resorts and rooms but do not do this in their homes in the village. They work twelve hours a day and come home tired, do not clean, just sleep. In my house I do the cleaning and cooking, my wife is tired." (Village Elder Male Personal Communication, 2021).

Discussion and observation uncovered the lack of toilets and shower facilities for the disabled, elderly and children in the villages, limited access to hygiene facilities in the workplace, and no specialised toilets, showers or access for staff in resorts. The following informants' observations illustrate this:

"Women and youth receive training in hygiene from a women's group Sogosogo Vakamarama." (Village Elderly Female)

"Currently, we have to walk about 50-100m, depending on where your house is to collect water from the water tank. For some of us, it's too far to walk and carry buckets of water back to our homes." (Village Female)

• Investigating gender diversity. The team included gender diversity due to donor requirements and its presence within many Pacific societies. Due to the research assistants' discomfort with questions relating to gender diversity, the team leader, as a mixed race elder, led discussions about relationships, WASH facilities, and community attitudes towards gender diversity. The team learnt that in many communities, gender diverse people were not formally acknowledged, often due to religious beliefs. Many chose not to express their diversity publicly or to voice their concerns, interests or needs due to fear of discrimination and abuse, as the following statement demonstrates:

"I worked in resorts and on cruise ships for many years and each month sent money home to help my family. My family know I am gay but we do not discuss this openly." (FDG015, Personal Communication).

Gender diverse Fijians can live in communities where they experience significant social stigma, including marginalisation from state and non-state establishments and institutions (Zajac and Godshall, 2020). It can be difficult for many to publicly challenge discrimination for fear of a backlash from family, faith-based organisations, their workplace and friends (Fiji National Civil Society, 2014). An interviewee stated, "If I asked for separate WASH facilities, they would punch me".

While urban representatives of gender diverse civil society organisations were forthright about the need for improved GEDSI, rural residents stated they did not wish to cause trouble or inconvenience anyone, were happy to maintain the *status quo* because village resources are so limited, they were grateful to have water, toilets and showers, and perceived the idea of requesting separate facilities for gender diverse villagers as selfish. As one interviewee stated:

"We have one gay person and three lesbians in the village. It is tabu to talk about it. They do not have separate toilets and showers. They use whichever ones they want." (FDG011 Personal Communication, 2021).

#### Recommendations to assist future researchers in Fiji

Indigenous Fijian communities are heterogeneous, and continuously adapt in response to internal and external factors. Whilst communities have been significantly impacted by international border closures and tourism's downturn, data collected in interviews, *talanoa* and *veivosaki yaga* sessions, revealed the strength of social capital and internal community relationships, and a return to traditional subsistence lives and resources which has helped people to develop the resilience required to survive during difficult times (Scheyvens and Movono, 2020).

The team learnt that research designed to inform the development of Inclusive WASH-at-Work programmes for the tourism sector, and conducted by using a culturally-sensitive and socially-inclusive methodology, is more likely to create meaningful outcomes for all involved when they adhere to the following practices:

- Design field research methodologies to embrace and explore socio-cultural contexts; encourage effective consultations via a blend of qualitative methods with a recognition of Indigenous traditions, protocols, customs and hospitality; provide Indigenous communities with a voice through the use of 'decolonised' research methods and obtaining their permission to communicate Indigenous knowledges;
- Employ in-country academics and researchers with public and private sector experience; and incorporate their knowledge and practices to build relationships of trust, communicate findings back to participants and deliver on outcomes promised;
- Ensure there is sufficient inception period and budget to establish in-country relationships, potential partnerships, and pilot and adapt all research tools to allow for local distinctions;
- Ensure that research discussions and data collection is included from public and private sectors, local community leaders, and from women and members of socially vulnerable groups; and raise awareness and fulfil the needs of Government policy-makers, industry stakeholders, academia and local communities:
- Encourage the publication of academic research papers that recognise the value of bridging Western qualitative and Indigenous research methodologies.

#### **Conclusion**

The insights and access that Australian and Fijian researchers gained through the use of a culturally-sensitive and socially-inclusive methodology that respected traditional Fijian protocols and customs have provided detailed and nuancedfindings. The findings have resulted in the

development of contextually-appropriate recommendations and tools and have strengthened long-term working relationships.

The COVID-19 pandemic has provoked a range of stakeholders to re-evaluate the sustainability of the future Fijian tourism sector. Effective Inclusive WASH services and practices are integral to the sector's sustainability, but previous Western methodologies designed to examine WASH and tourism have inadequately engaged with Indigenous communities. It is essential to connect with Indigenous communities in ways that respect their traditional protocols and customs. By valuing Indigenous researchers' ethnicity, expertise and lived experience, knowledge created about, and from Indigenous peoples' world-views, priorities and needs, interests and concerns can be enhanced.

Western methodologies designed to ensure cultural-sensitivity and social-inclusion can work to bridge the gap between Western and Indigenous knowledges. They can be applied to beneficially inform the development, planning and implementation of future research in the Pacific, contribute to continuing discussion about research methodologies, and progress Inclusive WASH in the tourism sector.

#### References

- Assessments, P. D. N. 2013. Volume A. Guidelines. Global Facility for Disaster Risk Reduction (GFDRR). Accessed August 10.
  - https://germanwatch.org/sites/default/files/FINAL\_Slowonset%20paper%20Teil%201\_2 0.01.pdf .
- Australian Bureau of Meteorology and Commonwealth Scientific and Industrial Research Organisation. 2014. "Climate Variability, Extremes and Change in the Western Tropical Pacific: New Science and Updated Country Reports 2014". Australian Government. Melbourne, Australia.
- Barnett Jon. 2020. "Climate Change and Food Security in the Pacific Islands". In Connell, John., and Lowitt, Kristen (eds). *Food Security in Small Island States*, 25-38. Springer, Singapore. <a href="https://doi.org/10.1007/978-981-13-8256-7\_2">https://doi.org/10.1007/978-981-13-8256-7\_2</a>.
- Bellon M, Chen C, Corvino D, Kilpatrick J. 2021. "Fiscal Policies to Address Climate Change in Asia and the Pacific". *International Monetary Fund*, Washington D.C.
- Benkeblia, Noureddine., Melinda McHenry, Jake. Crisp., and Philippe, Roudier. 2018. "Tropical Crops and Resilience to Climate Change". In Benkeblia, Noureddine. (ed.). *Climate Change and Crop Production: Foundations for Agroecosystem Resilience* (1st ed.), 83-103. Boca Raton https://doi.org/10.1201/9781315391861.
- Bird, Zina., Wairiu, Morgan., Jacot Des Combes, Helene., and Iese, Viliamu. 2021. "Religious and Cultural-Spiritual Attributions of Climate-Driven Changes on Food Production: A Case Study from North Malaita, Solomon Islands." In Luetz, Johannes M., and Nunn, Patrick. D. (eds). *Beyond Belief. Climate Change Management*. Springer, Cham. Switzerland, 39-56.
- Braun, Virginia., and Clarke., Victoria. 2006. "Using thematic analysis in psychology". *Qualitative research in psychology*, 3(2), 77-101.

- Bouwer, Laurens M. 2019. "Observed and projected impacts from extreme weather events: implications for loss and damage". In Mechler, Reinhard,, Laurens, Bouwer. M., Thomas, Schinko,, Swenja, Surminski., and Linnerooth-Bayer, JoAnne (eds). Loss and Damage from Climate Change, Climate Risk Management, Policy and Governance. Springer, Cham, Switzerland. 63-82.
- Challinor, Andrew J., Watson, James., Lobell, David. B., Howden, S. M., Smith, D. R., and Chhetri, Netra. 2014. "A meta-analysis of crop yield under climate change and adaptation." *Nature Climate Change* 4(4), 287-291.
- Dhanya P, and Ramachandran Andimuthu. 2016. "Farmers' perceptions of climate change and the proposed agriculture adaptation strategies in a semi arid region of south India." *Journal of Integrative Environmental Sciences* 13(1), 1-8.
- Dollinger, Jeanne., and Jose, Shibu. 2018. "Agroforestry for soil health." *Agroforestry Systems* 92(2), 213-9.
- Easton, Zachary. M., Bock, Emily., and Collick, Amy. S. 2017. "Factors When Considering an Agricultural Drainage System". Accessed June 20. <a href="https://ext.vt.edu/content/dam/ext\_vt\_edu/topics/agriculture/water/documents/Factors-when-Considering-an-Agricultural-Drainage-System.pdf">https://ext.vt.edu/content/dam/ext\_vt\_edu/topics/agriculture/water/documents/Factors-when-Considering-an-Agricultural-Drainage-System.pdf</a>.
- FAO. 2016. "The State of Food and Agriculture: Climate Change, Agriculture and Food Security." Food and Agriculture Organization of the United Nations. Rome, Italy.
- FAO. 2017. "The Future of Food and Agriculture—Trends and Challenges. Food and Agriculture Organization of the United Nations. Rome, Italy.
- FAO. 2020. "FAO's works on climate change". Accessed June 20. http://www.fao.org/3/ca7126en/ca7126en.pdf.
- Flick, Uwe. 2009. "Qualitative Methoden in der Evaluationsforschung." *Zeitschrift für Qualitative Forschung*, 10(1), 9-18.
- Foguesatto, Cristian. R., and Machado, João Armando Dessimon. 2021. "What shapes farmers' perception of climate change? A case study of southern Brazil." *Environment, Development and Sustainability* 23(2),1525-1538.
- Gachene Charles. .K.K., Karuma Anne. N., Baaru Mary.W. 2015. "Climate Change and Crop Yield in Sub-Saharan Africa". In: Lal, Rattan., Singh, Bal Ram., Mwaseba, Dismas. L., Kraybill, David., Hansen, David. O., Eik, Lars Olav. (eds) Sustainable Intensification to Advance Food Security and Enhance Climate Resilience in Africa. Springer, Cham, Switzerland. 165-183. https://doi.org/10.1007/978-3-319-09360-4\_8
- Handmer, John., and Nalau, Johanna. 2019. "Understanding loss and damage in Pacific Small Island developing states." In Mechler, Reinhard,, Laurens. Bouwer. M., Thomas, Schinko,, Swenja, Surminski., and Linnerooth-Bayer., JoAnne. (eds). Loss and Damage from Climate Change, Climate Risk Management, Policy and Governance, Springer, Cham. Switzerland. 365-381.
- Harvey, Celia A., Saborio-Rodríguez, Milagro., Martinez-Rodríguez, Ruth. M., Viguera, Barbara., Chain-Guadarrama, Adina., Vignola, Raffaele., and Alpiza, Francisco. 2018. "Climate change impacts and adaptation among smallholder farmers in Central America." *Agriculture & Food Security*, 7(1), 1-20.
- Howes, Ella L., Birchenough, Silvana., and Lincoln, Susana. 2018. "Effects of climate change relevant to the Pacific islands." *Pacific Marine Climate Change Report Card Science Review*, 1-19.

- IPCC. 2019. "Summary for Policymakers. In: Climate Change and Land: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems/" Geneva, Switzerland.
- IPCC. 2021. "Summary for Policymakers. In: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change." Cambridge, United Kingdom
- Iese, Viliamu., Maeke, Joseph., Holland, Elisabeth., Wairiu, Morgan., and Naidu, Sumeet. 2015. "Farming Adaptations to the Impacts of Climate Change and Extreme Events in Pacific Island Countries: Case Study of Bellona Atoll, Solomon Islands". In Ganpat, Wayne G., and Isaac, Wendy-Ann P. (eds). *Impacts of Climate Change on Food Security in Small Island Developing States*. IGI Global. 166-194. <a href="http://doi:10.4018/978-1-4666-6501-9.ch006">http://doi:10.4018/978-1-4666-6501-9.ch006</a>.
- Iese, Viliamu., Holland., Elisabeth., Wairiu, Morgan., Havea, Robin., Patolo, Soane., Nishi, Minoru., Hoponoa, Taniela., Bourke, Michael., Dean, Annika., and Waqainabete, Logotonu. 2018. "Facing food security risks: The rise and rise of the sweet potato in the Pacific Islands." *Global Food Security*, 18, 48-56.
- Keremama, Milton., Holland, Elisabeth., Khan, Mohammad GM., Hiriasia, David., and Tahani, Lloyd. 2019. "Air temperature trends, variability and extremes across the Solomon Islands: 1951-2011s." *Pacific Dynamics: Journal of Interdisciplinary Research*, 3(1), 15-32.
- Klöck, Carola, and Fink,m Michael. 2019. "Dealing with climate change on small islands: Towards effective and sustainable adaptation?" In Klöck, Carola, and Fink,m Michael. (eds). Dealing with climate change on small islands: Towards effective and sustainable adaptation?. Göttingen: Göttingen University Press. Germany. 1–15.
- Kopittke, Peter. M., Menzies, Neal W., Wang, Peng., McKenna, Brigid. A., and Lombi, Enzo. 2019. "Soil and the intensification of agriculture for global food security." *Environment International*, Volume 132. https://doi.org/10.1016/j.envint.2019.105078.
- Kumar, Sunny., and Sidana, Baljinder. Kaur. 2018. "Farmers' perceptions and adaptation strategies to climate change in Punjab agriculture." *Indian Journal of Agricultural Sciences*, 88(10), 1573-1581.
- Luizão, Flávio, Matson, Pamela., Livingston, Gerald., Luizão, Regina., and Vitousek, Peter. 1989. "Nitrous oxide flux following tropical land clearing." *Global Biogeochemical Cycles*, *3*(3), 281-285.
- Makate, Clifton, Makate, Marshall., Mango, Nelson., and Siziba, Shephard. 2019. "Increasing resilience of smallholder farmers to climate change through multiple adoption of proven climate-smart agriculture innovations. Lessons from Southern Africa." *Journal of Environmental Management*. Volume 231, 858-868.
- Maru, Edward, Shibata, Taiga., and Ito, Kosuke. 2018. "Statistical analysis of tropical cyclones in the Solomon Islands." *Atmosphere*, 9(6), 227.
- McCubbin, Sandra, Smit, Barry., and Pearce, Tristan. 2015. "Where does climate fit? Vulnerability to climate change in the context of multiple stressors in Funafuti, Tuvalu." *Global Environmental Change*, 30, 43-55.
- Mitra S, Mehta PK, and Mishra SK. Mitra, Susmita, Mehta, Pradeep. K.., and Mishra, Sudipta .Kumar. 2021. "Farmers' perception, adaptation to groundwater salinity, and climate change vulnerability: insights from North India.:" *Weather, Climate, and Society* Oct; 13(4), 797-811.

- Nguyen, Thu-Huong, Sahin, Oz., and Howes, Michael. 2021. "Climate Change Adaptation Influences and Barriers Impacting the Asian Agricultural Industry." *Sustainability*, *13*(13), 7346. https://doi.org/10.3390/su13137346.
- Noy, Chaim. 2008. "Sampling knowledge: The hermeneutics of snowball sampling in qualitative research." *International Journal of social research methodology*, 11(4), 327-344.
- Prokopy, Linda. Stalker, Carlton, Stuart. G., Arbuckle, Gordon., J., Haigh, Tonya., Lemos, Maria. Carmen., Mase, Amber. Saylor., Babin, Nicholas., <u>Dunn</u>, Mike., , <u>Andresen</u>, Jeff., <u>Angel</u>, Jim., <u>Hart</u>, Chad., and <u>Power</u>, Rebecca. 2015. Extension's role in disseminating information about climate change to agricultural stakeholders in the United States. *Climatic Change*, 130(2), 261-272.
- Ritchie, Roser, Mispy, Ortiz-Ospina. 2018. "Measuring progress towards the Sustainable Development Goals." SDG-Tracker.org. Accessed June 15. <a href="https://sdg-tracker.org/zero-hunger">https://sdg-tracker.org/zero-hunger</a>.
- Siegel, Jeff. 1986. "Wai: a Malaitan language in Fiji." FOCAL II: Papers from the Fourth International Conference on Austronesian Linguistics. Pacific Linguistics, 1986.
- Solomon Islands Government. 2015. "National Agriculture and Livestock Policy: 2015–2019. 2015". Honiara.
- Solomon Islands Government. 2020. "Solomon Islands Voluntary National Review". Honiara.
- Spann, Michael. 2018. "Living Other-Wise": The Bushmen Farming Network as an Example of "Alter-Native" Counter Practices to Agriculture and Development. *The Contemporary Pacific*, 30(1), 33-68.
- Tahu, Mary. Margarita. 2011. "Climate change, sea-level rise and coastal biodiversity of Ghizo island (Western Solomon Islands). Masters Thesis, University of the South Pacific, Suva.
- Trenberth, K.E., Jones, P.D., Ambenje, P., Bojariu, R., Easterling, D., Klein Tank, A., Parker, D., Rahimzadeh, F., Renwick, J.A., Rusticucci, M., Soden, B. and Zhai, P. 2007. "Observations: Surface and Atmospheric Climate Change." In: Solomon, S., Qin, D., Manning, M., Chen, Z., Marquis, M., Averyt, K.B., Tignor, M. & Miller, H.L. (eds). Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, 235-336. Cambridge, Cambridge University Press.
- Thornton, Philip K., Ericksen, Polly. J., Herrero, Mario., and Challinor, Andrew. J. 2014. "Climate variability and vulnerability to climate change: a review." *Global Change Biology*, 20 (11), 3313-3328.
- United Nations. 2015. The 2030 Agenda and the Sustainable Development Goals". Accessed March 2. https://www.un.org/sustainabledevelopment/development-agenda/.
- van der Geest, K., and Warner, Koko. 2020. "Loss and damage in the IPCC Fifth Assessment Report (Working Group II): a text-mining analysis." *Climate Policy*, 20(6), 729-742.
- Wairiu, Morgan., Lal, Murari., and Iese., Viliamu. 2012. "Climate change implications for crop production in Pacific Islands region." In Aladjadjiyan, Anna (eds). Food Production Approaches, Challenges and Tasks. InTech, 67-85. Rijeka, Croatia.
- Wall JR, and Hansell JR. 1973. "Soils of some quaternary marine terraces in the British Solomon Islands Protectorate and some problems in their agricultural use." *New Zealand Journal of Agricultural Research* 6(2), 271-286.
- Walsh, Margaret; Backlund, Peter; Buja, Lawrence; DeGaetano, Arthur; Melnick, Rachel; Prokopy, Linda; Takle, Eugene; Todey, Dennis; and Ziska, Lewis, 2020. "Climate

- indicators for agriculture." USDA Technical Bulletin, no. 1953. Washington, DC. doi:10.25675/10217/210930.
- Wang, Daoping., Jenkins, Katie., Forstenhäusler, Nicole., Lei, Tianyang., Price, Jeff., Warren, Rachel., Jenkins, Rhosanna., and Guan, Dabo. 2021. "Economic impacts of climate-induced crop yield changes: evidence from agri-food industries in six countries." *Climatic Change* 166(3), 1-9.
- World Bank. 2019. "Agriculture, forestry, and fishing, value added (%of GDP), World Bank national economic data and OECD National Accounts data files. World Bank Group." Washington, DC, USA.

#### Acknowledgements

The research was supported by the Australian Government's Department of Foreign Affairs and Trade through the Water for Women Fund. The research team gratefully acknowledges the participation of stakeholders in Suva and the Coral Coast. We appreciate the University of the South Pacific's Financial Support: Research Graduate Assistants, and allowing us to perform the study in the Solomon Islands. We are also grateful to the local farmers in the communities who participated in the survey. Without your participation, we would not have been able to complete it.

#### Authors' biographies

- Dr Dawn Gibson is a Senior Lecturer of Tourism and Hospitality in the School of Tourism and Hospitality Management at USP, Laucala Campus. With a PhD in Tourism Studies, Dawn's research interests include sustainable development and alternative livelihoods with a focus on increasing linkages to tourism, sustainable tourism, and the challenges of indigenous/community-based tourism operators, emerging trends in South Pacific tourism with a focus on Fiji, and cross-cultural management and employee empowerment, especially concerning South Pacific communities.
- Dr Sera Vada is a Postdoctoral Research Fellow at the Griffith Institute for Tourism. She is passionate about evidence-based research which influences policies and contributes to enhancing individual well-being and improving the livelihood of communities in the Pacific. With a PhD in tourism management, Sera also has over 10 years of experience in the tourism industry and a strong history of working with multiple organizations, including Government, Non-Governmental Organizations (NGOs), private and tertiary institutions.
- Patricia Bibi is an indigenous Fijian early career researcher. With a Master of Business from Southern Cross University and tourism background, she has worked extensively in Fiji's tourism industry in the private sector and with the Tourism and Management Discipline at the University of the South Pacific. Her focus areas of research are indigenous community empowerment and development.
- Nanise Masau is a graduate of the Tourism and Hospitality Management Discipline at the University of the South Pacific. She is a Research Assistant for the joint WASH Project between the Griffith University, Australia and the University of the South Pacific. She has more than 19 years' public sector experience in policy, planning, research, management, training and communication

- support. Her interests include community awareness, participation and development, capacity building and stakeholder partnerships for the sustainable development of tourism and mutual benefits for all.
- Bronwyn Powell is a Senior Project Manager at International WaterCentre, Griffith University. Bronwyn has a Bachelor of Science and Bachelor of Arts from The University of Queensland and a Masters of Environmental Science from Griffith University. She has over 20 years of experience in international development, applied research, capacity building and innovation, specifically in water, sanitation and hygiene (WASH) and integrated water resources management (IWRM), and works to bridge academic and practice spheres for better development impact. She specialises in managing multi-disciplinary projects and her research interests cover WASH, IWRM, governance, stakeholder engagement, gender and social inclusion, climate change and capacity building.
- Dr Apisalome Movono is a Senior Lecturer at Massey University where he continues his passion for the Pacific through research and promoting development that is fair, resilient, and sustainable for future generations. His work seeks to create a more accurate understanding of Pacific Island peoples and to find solutions and long-term strategies for the many challenges Pacific Islanders face. He completed a World Bank Ocean Finance Fellowship in 2020 and an East-West Centre Professional Fellowship in 2018. He is the co-founder of the Laucala Beach Sustainability Society and is an active conservationist and community development advocate for his people in Fiji and the Pacific region.
- Dr Johanna Loehr is a Postdoctoral Research Fellow at the Griffith Institute for Tourism. Johanna's research focuses on increasing the net benefits tourism creates for the wider system in which it occurs. Her research interests are sustainable tourism, climate change, well-being, policy making and systems thinking.
- Dr Lachlan Guthrie is a Research Fellow and Project Manager at the International WaterCentre, Griffith University and has extensive experience with using systems thinking in integrated water strategic planning and water security.
- Dr Wade Hadwen is a Lecturer in the School of Environment and Science at Griffith University. Wade has a Bachelor of Science (Environmental Science) from University of Queensland, Australia as well as Bachelor of Science with 1st class Honours (Ecology) and PhD (Ecology) from Griffith University, Australia. He has published more than 50 papers and industry monographs, exploring how human and ecological systems interact, with a focus on major global issues including climate change adaptation, ecosystem resilience, catchment management, WASH (water, sanitation and hygiene), sustainable tourism and the ecology of urban, riparian and coastal ecosystems. Wade is passionate about catchment scale issues that highlight the challenges of balancing water needs for people and the environment.
- Professor Helen Johnson is a Water, Gender Equality, Disability and Social Inclusion (GEDSI) and Civil Society Organisation (CSO) specialist, with over 37 years' experience in gender studies, anthropology, social science and cultural heritage. Helen has a PhD in Anthropology from Monash University and is currently a professor at The University of Sassari in Italy and Griffith University in Brisbane, Australia. Her research and consulting interests encompass gender impact assessment, gender and cultural diversity, and gender issues emerging from international development and resource extraction projects, within Australia and overseas.