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ARTICLES

Toward a Theoretical Framework for Educational Aid and Teacher Education within the Pacific Region

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Abstract

Educational aid projects delivered into the Pacific region from a rim country such as Australia are commonly informed by a range of competing discourses including: altruism, need, self-interest and accountability. Drawing on one example this article critically reflects on how educational aid might ethically position itself in relation to these discourses as well as respond to criticisms of aid from within some sections of the Pacific education community. Reflections include the importance of: quality relationships; negotiation of epistemological, cultural and other differences; self-determination; globalisation; and quality teaching and learning. Possible metaphors to guide educational aid towards its goals are suggested. Reflections cover two dimensions: the administrative aspects of partnering and other relationships contingent on successful educational outcomes; and quality teaching and helping students to arrive at a self-determined approach to teaching congruent with local identity and aspirations. Overall, a framework emerges that may provide guidelines for further educational aid delivery in the Pacific region.

Keywords: aid; consultancy; education; Pacific; teachers

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Educational Aid, Self-interest, Altruism and Need

The aid project under critical reflection was designed to deliver an initial teacher education (ITE) programme in Nauru in the Central Pacific (Serow, Taylor, Burnett, Sullivan, Smardon, Tarrant, & Angell, 2014). From its planning and inception stages in 2013 the initiative has been influenced by a number of discourses typical of educational aid projects in the Pacific region. An Australian university, operating in an extremely competitive Australian tertiary education market contingent on international student enrolments (Marginson, 2011) has entered into a relationship with the Nauru government's Department of Education. Emerging from this relationship has been an identified need for localised Nauruan teacher preparation to off-set very high numbers of expatriate teachers (Collingwood, 2014, p. 28; Republic of Nauru, 2009, p. 31 and 2011a;), as well to meet the requirements of a recently introduced teacher registration process with a view to higher levels of quality teaching (Government of Nauru, 2011). To conduct the project the university and the Nauruan government have obtained funding from Australia's Department of Foreign Affairs and Trade (DFAT), which has not long absorbed Australia's foreign aid initiatives (AusAID) into its sphere of influence, thus aligning aid more closely with foreign policy. Accordingly, more than ever before self-interest sits awkwardly alongside altruism in Australia's aid program. Evidence for this can be found in the "four tests that guide strategic choices" (Department of Foreign Affairs and Trade, 2016) for delivery of aid stated by Australia's DFAT itself. Australian development assistance must not only "impact on promoting growth and reduce poverty", but "pursue our national interest and extend Australia's influence"; "reflect Australia's value-add and leverage"; and "make performance count" (Department of Foreign Affairs and Trade, 2016). This move by Australia to align its aid programme more closely with its own self-interest is likely linked in this case to Australia's very controversial ties with Nauru as a site for its own offshore refugee processing (Gleeson, 2016; McAdam, 2014; Triggs, 2014; among many others); relatedly, Nauru's own economic fragility after the depletion of its phosphate reserves and diminishing investments in which Australia has been implicated (Cox, 2009); and a degree of Nauruan political instability in close geographical proximity to Australia's often called "arc of instability" to its northeast (Anyon, 2007).

Towards a Framework

A nuanced framework, therefore, is needed in response to the complexities of the educational aid delivery environment marked by the mixed discourses of altruism, self-interest and need outlined above both in Nauru and in the wider Pacific region. Certainly projects such as NTEP find a mandate in the very recent UN *Sustainable*

Development Goals (SDGs) (United Nations, 2015). SDG Four, for example, specifically states "the need to substantially increase the supply of qualified teachers … through international cooperation for teacher training … especially in … small island developing states". However, much more needs to be done to anchor such projects amid the competing discourses identified as well as negotiate a long history of what critics from within the Pacific regional community argue have been aid projects that disempower (Sanga & Taufe'ulangaki, 2005). Educational aid, nearly always from Australia and New Zealand has been criticised specifically from within the Pacific region for its tendency to disengage recipients through its densely bureaucratic processes and accountability regimes and, as mentioned above, to serve donor economic and security interests (Sanga & Taufe'ulangaki, 2005).

A framework is needed that also sets educational aid within the complexities of a Pacific education policy debate that has long emphasised the centrality of cultural difference and scepticism of exogenous educational influences in the region for the disruption they bring to local knowledges and ways of knowing (Petaia, 1980; Taufaga, 2007; Taufe'ulungaki, 2003; Teaero, 2007; Thaman, 2009; among others). See for example, the many expressions of Pacific education and epistemological reclamation such as Thaman's *kakala* (Thaman, 2009), Maua-Hodges' *tivaevae* (Te Ava, 2014) and others within the *Vaka Pasifiki* collective (see, for example, Toumu'a, 2014) and its previous iteration, the *Rethinking Pacific Education Initiative* (see, for example, Pene, Taufe'ulungaki & Benson, 2002). See also the *Pacific Education Development Framework 2009-2015* (Forum Ministers, 2009) and its "Cross Cutting Theme: Language and Culture" (p. 16). Based on *Pacific Plan* objectives this theme seeks to ensure "the cultural values, identities, traditional knowledge and languages of Pacific peoples are recognised and protected" (p. 16).

Closely related is the fraught nature of quality teaching in the region and what that might look like specifically in Nauru. Gaiyabu (2007) notes Nauruan learners' "individualism submerged by the need to respect authority" (p. 258) and how from a "Western view this inhibits children's capacity to take responsibility for their own learning" (p. 258). Individualism and learner responsibility are key elements in constructivist views of learning widely embraced in Australia and New Zealand. Gaiyabu (2007) argues that "If individual responsibility for one's own learning is considered a valid direction in which to move in Nauru", then it will need to be via a "slower process, which respects for cultural traditions … with support from critical friendship … by those who have a deep knowledge of the culture" (p. 258). A framework for ethical educational aid such as NTEP needs to carefully respond to Gaiyabu's (2007) "if" as well as show sensitivity in leading quality teaching in this direction should it be deemed appropriate.

Critiques of Aid within the Pacific Region

Emerging from the above discursive aid environment is a set of counter discourses authored within the Pacific education community that has critically responded to dominant Australian and New Zealand aid initiatives. This resistance culminated in a landmark 2005 conference on educational aid in the region hosted by the *Rethinking Pacific Education Initiative* (Sanga, Chu, Hall & Crowl, 2005; Sanga & Taufe'ulangaki, 2005). Key requirements of aid emerging from this conference include: the capacity of aid project personnel to speak the Pacific vernacular of the place the aid is delivered in; a deep understanding of the culture of the site the project is implemented in; the employment of people with familial or friendship connections with the site the project is implemented in; among other similar traits all hinging on cultural difference between donor and recipient. However, while there is much from Sanga et al's (2005) critique to heed by aid project designers, there is also an element of culturalism that needs to be considered when re-formulating how educational aid in the Pacific should be delivered. Culturalist discourse, in its more extreme manifestations, hinges on monolithic and reductive views of Pacific cultural difference (Burnett, 2007, 2008, 2009) and tends to resist expressions of culture that are evolving, dynamic and socially constructed (Doherty & Singh, 2005; Llohsa, 2001; Meredith, 1999; among others).

Educational aid in the Pacific, such as the current example, needs to recognise Pacific cultural difference without essentialising it. Provision of aid needs to concede to a dynamic, constructed sense of Pacific culture but at the same time, enable local self-determination over the direction in which both the aid relationships go as well as the notions of what quality teaching looks like in a Pacific context, and more specifically in this case the Nauruan context.

Additionally, provision of aid must recognize a level of resentment and scepticism among Nauruan teachers resulting from what Gaiyabu (2007) argues, has been constant change and instability in the education sector over time. This resentment arose in the mid-1990s primarily due to political instability in Nauru rather than any real sense of cultural incongruence felt among Nauruan teachers over outsider involvement. Indirectly, as a result, through constant change in government, there has been a steady stream of "outside experts" (p. 256) encouraging the adoption of new educational initiatives. Project personnel are mindful that their presence in Nauru is merely the latest in a very long line of nearly always Australian and New Zealand aid and consultancy organisations and individuals seeking to provide educational solutions. Since 2013 when the project started, there have also been substantial undertakings in schools by a range of Australian and New Zealand

education-related organisations (These include Cognition NZ, the Queensland Educational Leadership Institute, Connect Settlement Services, Brisbane Catholic Education and Save the Children) in the areas of: teacher professional development; leadership advising; curriculum area advising and a range of smaller short term consultancies by individuals in areas such as: teacher well-being; child protection; TVET strategic planning and sector-wide education planning.

Project Relationships and Quality Teaching

A framework therefore is required to address at least two dimensions of the project. Firstly, the way in which the project enacts its multi-faceted relationships (Sullivan, Serow, Taylor, Tarrant, Angell, Burnett, & Smardon, 2017) in response to the competing discourses of educational aid mentioned earlier. These relationships are between the Australian university and Nauru's Department of Education; between both and the schools that are needed to partner with to deliver ITE; as well as between these and other educational projects and initiatives in-country. The set of relationships also incorporates: Nauruan students (both pre-service and in-service) and their families with academic support; particularly but not confined to the unique supports provided by the project on the island. Secondly, is the way in which the project addresses the perceived disruption to local knowledge and ways of knowing mentioned earlier. A framework is needed to guide what quality teaching might look like on Nauru, including the students' responses to the educational ideas, particularly the socially constructivist views of teaching that flow into the project's study centre via the units and the academic supports they receive. This dimension needs to also address the "Pacific Focus", so named and central to the teaching degree the Nauruan students are completing.

Educational Relationships

Anae (2010), in the context of Pasifika education research in New Zealand, has proposed the Samoan concepts of the *va* and *teu le va* to guide the development of quality relationships between all involved in the research process. The *va*, meaning "the sacred space" (p. 12) that exists between researchers and researched and *teu le va*, meaning "to nurture" and "to tidy up" (p. 12) that space, can also be applied to educational relationships more generally, including those of teaching and learning at all of its levels. In terms of quality teaching and learning relationships in the specific context of Nauru, the terms *amen bwiõ* (relationship), *egade* (culture) and *aeo pwidu* (contribution) best approximate the Samoan *va*. These concepts form the basis of the *Nauruan Social Science Syllabus* (Republic of Nauru Education Department, 2013) strand of learning called "social living" (p. 4) but can be applied more widely to the

sorts of relationships the project has sought to foster. A mindful attempt has been made to develop and nurture the *va* in its multi-faceted relationships primarily between in-country and on-campus lecturers and the Nauruan students, but also between the various interest groups such as student families, the Nauruan community, key personnel in the Ministry of Education, schools, their principals and staff. The "weddings, funerals everything" support role of the two in-country support lecturers has been crucially important in this regard. This support has ranged from explicit teaching in some units of study through to facilitation of learning in others.

This role has extended far beyond that of standard tertiary teaching and learning relationships to encompass much in the personal lives of the Nauruan students, including the birth of children, marriage, the death of family members, key milestones such as first birthdays of children, first communions, and 21st birthdays. It includes participation in community events along with everyday car conversations, whilst transporting students to and fro – largely facilitated by Nauruan student generosity and through living together in the very small island community over the more than two years of the programme.

Closely linked to quality relationships mentioned above is the possibility of openness to new understandings – about teaching and learning and how to teach well. As mentioned before, there is a long running scepticism in the Pacific region of outsider educational ideas, especially as they come through consultancies and aid. Dening (2004), however, in the context of his work as a Pacific historian, explains to his postgraduate research students that they should not consider footprints in the sand of their beach as evidence of "trespass", but instead "signposts" to be read and interpreted (p. 259). In response to this explanation, the Nauruan students have been encouraged to be critical as they encounter signposts about teaching and learning – adopting, modifying and rejecting ideas they meet in the programme. The project concedes that the students, especially those who are in-service, know closely the aspirations of Nauruan families and their community, and are thus in a position to decide critically on the value of what they are learning to meet those aspirations.

Indeed the beach as a metaphor for educational aid more generally is apt. The beach has long been a place in the Pacific region where locals meet strangers and where the new and the pre-existing meet. The beach, as metaphor, helps explain the complexities of people's lives in globalising times and the necessity and desire to engage with difference. Dening (2004) argues that the beach symbolises the 'edginess' of identity construction and reconstruction whenever Pacific peoples meet strangers and strangeness – often European strangers and strangeness. The core of

the aid project beach has been the designated study centre, a spare classroom at the Nauru Secondary School. In this space daily for the two and a half year duration of the programme, encounters with differences have been played out. These differences include but are certainly not limited to those between: *Iburbur* lecturers and Nauruan students; English and Nauruan languages; social constructivist pedagogies and more directed local pedagogies; the rigid structures and efficiencies of an Australian tertiary institution and the relative looseness of Nauruan sociality and time management.

The ideas of Thomas (1991) further elucidate the beach metaphor and help theorise what the project has attempted. Thomas argues that objects that have always crossed the Pacific beach are "entangled objects" meaning they never come with their purpose inscribed (Thomas, 1991, p. 108). We might also include here: values, dispositions, and from an educator's point of view, knowledge, skills, pedagogies and epistemologies. Certainly, education is not a material object in the sense that Thomas would have it, but the point is the creative response of Pacific people who engage with it – a response that is not always in the spirit in which it is authored by non-Pacific providers. As the Nauruan students have encountered new learning about teaching, there has never been any guarantee as to how that learning has been received and incorporated into existing or emerging personal philosophies of teaching. The project has needed to accept a Nauruan autonomy to either accept, reject or modify ideas as they crossed the study centre as the beach.

In constructing Nauruan students as critical consumers of educational ideas, the project moves beyond the culturalism that tends to bind Pacific learners to either being colonised or re-indigenised. The ideas of Pacific sociologists Hau'ofa (2008), Herrman (2007) and Teaiwa (1995) form a useful basis for the way the project has attempted to frame its students. In terms of Hau'ofa, the Nauruan students take on a role resembling Hau'ofa's Tongan friend flying high above the lines of latitude and longitude between multiple homes in Fiji, Tonga and the US, resisting the deadly discourses that bind him to just one place or another. Similarly, the project has attempted to enact relationships with the Nauruan students that do not bind them to an overly simple choice between being advocates for a re-indigenised Nauruan identity as some Pacific commentators have stressed or uncritical receivers of Western educational ideas on the other hand. In terms of Teaiwa (1995), the distinction she makes between her own Pacific *roots*, meaning a sense of place (elsewhere in the Pacific the *vanua, whenua, enua, fonua, etc.),* and *routes,* meaning an engagement with the world and its diversity (socio-cultural mobility and globalisation), offers a loose framework for the Nauruan students to base their personal philosophies of teaching on. In the Nauruan students' case, an education

where the knowledge, values and dispositions of *bwiõ*, a concept relating to land and belonging, very similar to concepts like *vanua* and *whenua* in the Pacific, sit alongside those of the global and the transformative historically attributable in the main to wealth from mining. In terms of Herrman (2007) there is resonance with the notion that education is for "all times" where the past and future are considered equally important in the identity formation and development of children through formal schooling. Herrman's point is that outsider interventions into Pacific education often over-emphasise technological futures at the expense of the identity affirming past, evidenced in the often heard catch-cry of education for "new times" particularly in relation to literacy teaching (see, for example, Luke, 1999 and in the Pacific region, Low, 2007).

Quality Teaching and Learning

What then are the teacher preparation practices that emerge from a theoretical base that emphasises such elements as: the liminality of the "beach"; roots and routes; Nauruan teacher agency and self-determination; and critical engagement with new ideas? At the project's most basic, there are a number of key elements at this level of the framework. These include the importance of Nauruan language in both the learning of the students and the emphases on language the students make as teachers of literacy in their own classrooms. A number of key Nauruan education documents support the teaching of Nauruan language (see, for example, Republic of Nauru Education Department, 2012). However, as Barker (2012) outlines, a full embrace of Nauruan language in schools on the island and in the wider community is fraught for several reasons. The first is related to agreed upon language conventions and an inability of successive language boards to implement a unified Nauruan orthography. This long running problem has meant that very little Nauruan literature exists apart from the Bible. The second is the continued encroachment of English language into spheres of Nauruan social life that were once the preserve of Nauruan language only such as the courts and church life. Barker (2007) argues that English as "bully" has caused further decline in Nauruan language, a charge that can be levelled at many communities across the Pacific region (Taufe'ulungaki, 2003).

The Despite these challenges, including an inability to function using Nauruan language, the project team has encouraged the use of both languages in class discussions within the programme itself, utilising a form of what Baker (2013) terms "translanguaging" (p. 288). This has involved high levels of educational trust between non-Nauruan speaking in-country lecturers and Nauruan speaking students in working together toward learning goals. As a result, this goes some way towards

addressing the *Declaration on the Rights of Indigenous People* (United Nations, 2008) when it asserts that "indigenous individuals, particularly children … have access, when possible, to an education in their own culture and provided in their own language".

In terms of "Pacific Focus" the project has also sought to initiate its students into particular Pacific education debates involving distinct Pacific perspectives on: pedagogies of cultural difference; views of the child; metaphors for teaching; schooling's colonial roots and self-determination; education policy responses and research outcomes; and the ways in which Pacific neighbours enact schooling. Key figures in Pacific education research and debate are also examined alongside the many non-Pacific educational ideas, including the communities of Pacific education and research practice at *The University of the South Pacific*; the *Institute of Education*; the *Rethinking Pacific Education Initiative* and the more recent *Vaka Pasifiki* collective. The on-island academic support role has been instrumental in this regard by integrating the Pacific focus within the pre-existing degree content. An attempt has been made to blend university programme content, which reflects local desires for students to attain an Australian tertiary qualification but at the same time recognise Pacific epistemological and contextual difference. At times this has been a challenge and so has become a key area of the project's ongoing reflection on its own practice.

More substantively, however, the project takes as its starting point Gaiyabu's (2007) assertion that Nauruan learners' "individualism is submerged by the need to respect authority" (p. 258). This is consistent with Pacific learner subjectivity across the region, that is, that notions of the individual are subsumed by the collective. This can be seen in debates ranging from human rights (Qarase, 2004) through to debates specific to Pacific learners and education generally. Conflating learner centred pedagogies with quality teaching in the Pacific is problematic in a number of ways. O'Sullivan (2004), in the context of a UK led Namibian teacher in-service programme seeking to change pedagogical practice, could not have put it any clearer in terms of possible incongruence between learner-centredness and local culture and sociality.

> We need to bear in mind the general child rearing practices considered appropriate and legitimate by the culture in which the teacher works: For it may be we are asking a society to change its general attitude to the way all its adults interact with the children for whom they are in some way responsible. (O'Sullivan, 2004, p. 596)

This has also long been the criticism of non-Pacific educational interventions in the region by many Pacific educators (see, for example, Teaero, 2007; Thaman, 2009 and the *Vaka Pasifiki* and *Rethinking Pacific Education Initiatives* research

collectives). The project resists essentialised Pacific or Nauruan identities but concedes to Gaiyabu's (2007) "if-then" reservations concerning learner-centredness. Certainly, the university's preferred pedagogies, through its various teaching programmes, tend to be liberal-democratic and learner centred in orientation. But the Nauruan students have been urged to take a critical view of what constitutes quality teaching as they meet with these ideas. The students have been exhorted to constantly question the ideas they are being encouraged to adopt and to draw on their own intimate knowledge of adult-child relationships in the Nauruan families and communities they are integral to as teachers and, in most cases, as parents also.

There is a view also that learner centred pedagogies are more than just culturally incongruent with local sociality, but deeply geo-political also. Tabulawa (2003) argues that learner centred pedagogies, particularly when backed by formal educational aid from other governments, act as a form of democratisation of gerontocratic, chiefly or patriarchal indigenous community relations by stealth. Certainly, in the light of Australia's fears concerning the nearby arc of Pacific instability, there might be an element of truth in Tabalawa's claims. Additionally, in comparative and international education research and debate, links have been drawn between learner or child centred pedagogies, constructivism and the global spread of neoliberal ideology (Carter, 2009, 2010; Cobb, 2003; Egea, 2014; Rodríguez, 2013; Schweisfurth, 2013). There is a body of critique that likens the agential independent learner/child's relationship with the teacher/facilitator to the relationship between the individual and the state in neoliberal society more generally. In both the classroom and society, the individual becomes self-maximising in relation to a non-interventionist teacher/government. As Carter (2009) suggests, learner centredness is linked not so much to research evidence supporting claims for more meaningful and effective learning, but more so to the sort of future societal relationships advocates wish to create. Learner-centredness merely "reflects the social norms of the Western liberal democratic capitalist systems in which they arose" (p. 58).

One of many examples to illustrate, is Sims (2011) "hierarchy of rights" based on Maslow's hierarchy of needs that has at its pinnacle an individual child's right to self-actualisation, seemingly free of any social connectedness to others (see Bouzenita & Boulanouar, 2016; Gambrell & Cianci, 2003; Hanley & Abell, 2002). In other words, when constructivism and learner centredness are taken across borders of indigenous difference, the educational endpoint becomes the creation of entrepreneurial individuals for the global marketplace and a potential dismantling of long standing communal and familial ways of knowing and being. A Pacific response to the individualization of Sims' (2011) self-actualisation might be Alofa's comment to US Peace Corp teaching volunteer Miss Cunningham in Sia Figiel's (1996) *Where We Once Belonged* – '"I" does not exist, Miss Cunningham. "I" is "we" … always"'

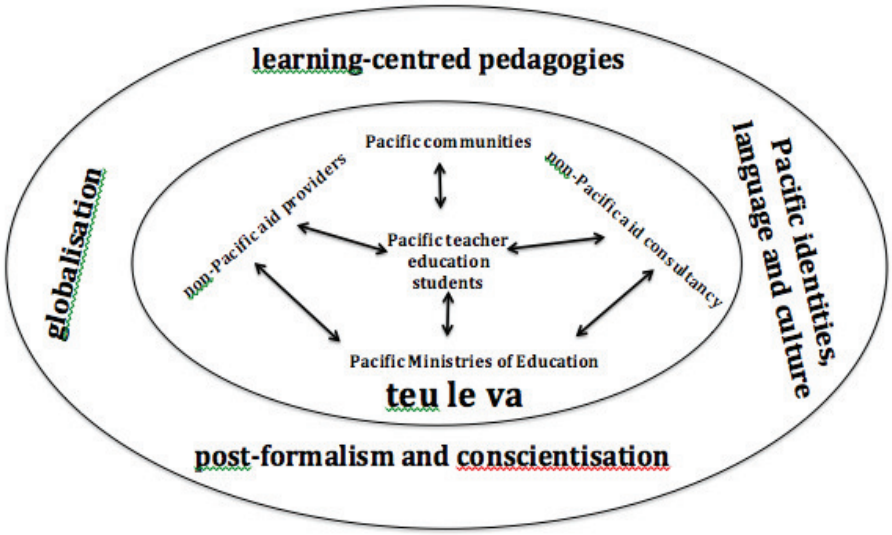
(p. 136). To persist in Nauru schooling with an unuanced learner centredness or "liberal progressivism" as Kemmis et al (1991) have called it, might ultimately, through Nauru's future citizenry, only draw the country further into the global/capitalist orbit that historically it has fared so badly in.

In response to the above criticisms, educational aid projects might instead take a "learning centred" approach (Dyer et al., 2004; O'Sullivan, 2004; Schweisfurth, 2011) as opposed to a "learner centred" approach. Here the focus is on choices for learning itself rather than the learner. A learning centred approach (Dyer et al., 2004) grants higher degrees of autonomy and agency to Nauruan students and allows them a chance to link their future pedagogical choices with consequences based on the insights into family, community and national aspiration that only they can have as local teachers and members of the Nauru community. Reflection and discussion between lecturer and student then becomes based on a principle of: "If I teach like this then that might happen"; "If I teach like that then that might happen"; and finally "How then will I teach?". Students need to be exposed to multiple orientations to teaching and be allowed to draw conclusions as to the consequences of each in terms of not only children's learning outcomes, but the way various orientations constitute children, social relations and society generally. The multiple perspectives on teaching here reflect Kincheloe and Steinberg's (1998) "post-formalism" (p. 7) where student teachers embrace ambiguity and reject formulaic approaches to teaching. A number of typologies exist to facilitate this approach. Examples include Jones, (2013) – conservative, liberal, critical, postmodern; Kalantzis and Cope, (2012) – mimesis, synthetic, reflexivity, and Kemmis, Cole and Suggett, (1983) – vocational neo-classical, liberal progressive and socially-critical. In terms of the project's own approach to the way pre and in-service teachers learn this ushers in a socially-critical element, including degrees of "conscientization" (Freire, 1970), to their own learning and teaching and addresses any concerns that might exist over both conservative rote and liberal individualist alternatives.

The recommendation for the project then is to bring Nauruan students to a point where they make pedagogical choices knowingly based on their intimate knowledge of the Nauruan or broader Pacific community within which they live and work (Burnett & Lingam, 2007). This approach finds resonance in the *Declaration on the Rights of Indigenous Peoples*, for example in Article 14 which states: "Indigenous peoples have the right to establish and control their educational systems and institutions providing education in their own languages, *in a manner appropriate to their cultural methods of teaching and learning*" (United Nations 2008, emphasis added). At this point Nauruan self-determination is acknowledged and affirmed in much the same way Graham Smith (2000) describes the re-assertion of Maori control over education in Aotearoa/New Zealand in the early 1980s. "Teaching and learning

settings and practices are able to connect closely and effectively with the cultural backgrounds and life circumstances (socio-economic) of Maori communities. These *teaching and learning choices are selected as being culturally preferred"* (p. 67, emphasis added). Likewise, Nauruan students, particularly the in-service students, are acutely aware of issues pertaining to Nauruan identity, culture, and family and community aspirations and so are best equipped to make a similar set of pedagogical choices. It is fundamentally important that educational aid interventions in the Pacific constitute their students as active, professional and knowing participants in the development of their own teaching and learning repertoires. In-country lecturers and other project support staff struggle to understand the important issues of Nauruan identity, aspirations and sociality to the same degree. These ideas find resonance elsewhere in the Pacific in Gegeo & Gegeo-Watson's (2007) "critical praxis" in the Solomon Islands where children are prepared for either village or modern post-school life chances "whatever the outcome of their schooling may be" (p. 322). There is also resonance in Willinsky's (1998) orientation to education more generally in a former Empire that affords learners "a view in the rear-view mirror" (p. 251) of learning that has divided the world. Put more simply, this means critically reflecting on the past and/or commonly accepted approaches to teaching and then making links with potential consequences for teaching in that way.

Figure 1. Quality Educational Relationships and Teaching – a Framework for Educational Aid in the Pacific Region



Source: Author

Conclusion

The role of teacher in Nauru is critical for an uncertain future where phosphate mining has long since ceased to sustain the country economically and Australia's off-shore refugee detention centre can only ever be a short term economic fix, an ethically dubious one at that. It is this uncertainty and the competing discourses of altruism, need and self-interest that have initially influenced the formation of the project. The two-part framework discussed above (see Figure 1) that places emphasis on educational relationships and critical approaches to pedagogy makes it possible to work within such discourses. The framework encourages a critical perspective from Nauruan teachers as educational ideas have "crossed the beach", including both Pacific and non-Pacific ideas and theorists. Such ideas and theorists are Thomas's (1991) "entangled objects". Without purpose inscribed, Nauruan students invariably accept, reject or modify ideas as they are encountered, thus working toward their own unique repertoires of teaching. These repertoires are based on local teachers' intimate knowledge of Nauruan family, community and national aspirations. The framework outlined above for educational aid seeks to promote teacher self-determination through a "learning centred" philosophy or orientation. The project has also sought to initiate teachers into the debates and research, in particular Pacific education debates and research, which in turn encourage an agential teaching self. This will enable Nauruan teachers to continue working toward an effective set of local pedagogies consistent with UNDRIP's (United Nations, 2009) Article 14 which asserts the right of Indigenous people to teach and learn in a first language and in a manner consistent with local cultural practices and values. Such a set of pedagogies can only emerge in the light of local teachers' intimate knowledge of family, community and national aspirations. This in turn affirms Nauru teacher professionalism.

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Kiribati Game Development: Cultural Transmission, Communities of Creation, and Marketing

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Abstract

The people of Kiribati play a broad assortment of card and board games. The game rules show several innovations that were made outside the purview of the games' manufacturers. The presence and regional development of proprietary board games illustrates product development scenarios that are counterintuitive to marketers. Using game boards and game rules collected in Kiribati, this study offers an explanation on how game development in Micronesia can be understood using cultural transmission theory by locating the Republic of Kiribati both geographically and economically within the Pacific Islands economies and their communities and within their own anthropological context. The findings emphasize the importance of understanding regional and country-specific cultural practices when applying principles of product development, placement and distribution.

Keywords: cultural evolution; gaming; Micronesia; play; Tarawa

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Cultural Evolution and Communities of Creation

In a study by Hirschman (2009, p. 451) on the role of marketing in cultural evolution, she identified three topics of inquiry that could potentially benefit from an evolutionary perspective: "(1) companies as families/tribes, (2) reciprocity versus opportunism in company-to-company and company-to-consumer relationships, and (3) brands as social markers." In her study, she speaks of the "transfer of information, products, and services across generations and over millennia" and of "*intergenerational cultural transmission* within human groups, which created strong selective pressures for social learning capabilities" (Hirschman, 2009, p. 445).

Colbert and Courchesne (2012) highlight cultural transmission in relation to family, peer and media influence and how they shaped the evolution of consumer behaviour in the arts. They argue that contemporary consumers come from a plurality of social worlds and that this dynamic requires a rethinking of marketing.

This integration of ideas of cultural transmission theory and evolution into marketing processes is of particular relevance when considering board and card games. Games, as opposed to play in general, have a long history of being both products commercially developed using marketing principles (Woods, 2012) and being cultural practices that predate the commercial game industry by millennia (Finkel, 2007; Schädler, 2007). The understanding of a cultural practice and its mode of transmission not only informs marketing strategies for particular culture groups, but also refines our general understanding of the cultural transmission of games of which only few studies exist.

In a study on cultural variation in Africa, Guglielmino et al. (1995) argued that games follow a vertical transmission principle, where they are mainly taught within families and from one generation to the next. If this transmission mode is dominant across cultures, then games will not easily transmit across large areas of space, in particular across cultural and linguistic borders. In a study of Near Eastern board games in antiquity, de Voogt et al. (2013, p. 1728) found for certain games:

> that expansive areas and long periods of time do not necessarily change the physical appearance of a game board. These games, therefore, were transmitted with high fidelity and only minor subsequent innovation or experimentation, despite the passing of dozens of generations and transmission events across cultural, linguistic and enemy borders.

Other games, however, showed "a distribution confined by the expansion of a single empire, and subsequent changes when these borders were crossed." (de Voogt et al., 2013, p. 1728) Although two different cultural transmission mechanisms, in each case board games showed a remarkable amount of stasis over time, while changes in appearance were only found in some but not in all cases where borders of empires were crossed.

Groups that span different cultures, languages or geographic regions may seem akin to the concept of consumer tribes as it is used in tribal marketing (Shankar, Cova, & Kozinets, 2007). This concept, originally used to describe postmodern counter-culture movements, states that members are related by "shared feelings and (re)appropriated signs", while membership is "ephemeral" and can be of several such tribes (Cova & Cova 2002, p. 6). In this way, a player could be part of several groups, identify with the passions of that group as well as leave that group as membership is not defined by "kinship or dialect" (Cova & Cova 2002, p. 6). Although such player groups may exist today and can be construed as postmodern counter-culture movements, for instance in online gaming communities, the concept is inappropriate for groups in antiquity or outside this counter-culture realm since in those cases the games are considered part of society. Even though the players are found across different societies or culture groups, each of these societies has appropriated the games as their own. Players are not seen as alien to or distant from society even though their peers may reside in other regions or contrasting culture groups.

While perhaps not consumer tribes, groups of players could be adequately captured by the model of "communities of creation" as defined by Sawhney and Prandelli (2000) and further developed by Sawhney, Verona and Prandelli (2005) for internet communities. Their ideas go back to the general observation in strategic marketing that companies should collaborate with consumers to create value (Prahalad & Ramaswamy, 2004; Thomke & von Hippel, 2002) and ultimately through product innovation (Dahan & Hauser, 2002). They suggest a mechanism for managing knowledge in companies for the purpose of innovation where intellectual property rights are owned by the entire community. This relates to Hirschman's suggestion to see companies as families or tribes for which cultural transmission theory could become relevant. Indeed, innovation in games that occurred in history are rarely attributable to individual players as the success of the innovation is dependent on the players group that needs to test and accept such a change before anything changes within the community of players. It is for this reason that stasis in board games is particularly common and expectedly so in cultural transmission theory as this cultural trait is shared before it can be transmitted. In other words, innovations may seem simple to make, but they are particularly difficult to introduce across a large players group. As a follow-up to communities of creation, Coakes and Smith (2007)

introduced communities of innovation that are dedicated to the support of innovation. However, their concept runs counter to our understanding of board and card games in history as the players are especially conservative and are not playing *in order to* innovate.

In sum, board and card games show a remarkable stasis throughout history while at the same time crossing cultural, linguistic and geographic borders. The players of these games form groups that are part of their respective societies as opposed to forming a counter-culture movement. They act as communities of creation when it comes to innovations as it is not up to an individual to change the rules of the game whether they are online communities or not. It requires a change of practice of all players, which makes these games especially conservative.

The development of proprietary games started with the industrial revolution (e.g., Hofer, 2003; Whitehill, 1999) and these board and card games only behave marginally differently. The written rules suggest an innate conservatism when it comes to rules while the manufacturer or producer acts as a dominant force to introduce the game to as many consumers as possible.

But occasionally, the producer loses control over this process and games are introduced without the conservative influence of written rules or even without the sale of the physical board and pieces. In such cases the game and its players still follow the dynamics outlined above where groups of players determine the history and development of the game and where the game may cross multiple borders to extend its reach. Its distribution commonly becomes more involved and more extensive than what a manufacturer could accomplish, but at the same time there is no profit to be gained as the players have also taken the manufacturing, with the possible exception of playing cards (which are rarely produced locally), into their own hands.

It is rare that a proprietary game becomes a "classic". Companies such as Parker Brothers (Orbanes, 2004) ultimately aspire to such success and have geared their marketing with that aim in mind. In the golden age of board games (Hofer, 2003) several games in the United States achieved that status but the manufacturer kept control and profited from its triumph. Leaving aside other gaming cultures, such as video games, that are beyond the scope of this study, the Pacific Islands, specifically the people of Kiribati, show that board and card games can become especially popular, but without profiting the manufacturer. This process of diffusion and innovation then becomes close to what is expected in cultural transmission theory and in communities of creation. Since players of Kiribati present a contemporary example, the relevance of cultural transmission theory in understanding the distribution and development of a

product, in other words understanding marketing, is highlighted in a geographical context that has received little attention in the literature.

While cultural transmission theory gives insight into why stasis and innovation may take place, literature on product innovation has conceptualized how the process of new product design (NPD) is supposed to take place. Commonly described as a five-step process, it includes ideation, concept development, product design, product testing, and product introduction (Ulrich & Eppinger, 2003; Urban & Hauser, 1993). Sawhney et al. (2005) contrasted NPD in the virtual environment, but in both cases one may argue that the process is too formulaic for players in Kiribati. The purpose of this study is foremost to show *that* product innovation takes place outside of the manufacturer's reach, while the process seems to show that product introduction is *followed* by product testing with incremental innovations that require only limited ideation and concept development in the initial stages.

Methods

This research is part of a larger project that aims to understand the cultural transmission of board games both for contemporary games and for games in antiquity. For this purpose, Kiribati was visited together with the Marshall Islands in the months of December 2017 and January 2018 with approval of the Institutional Review Board of the American Museum of Natural History in New York and with research permits for each country.

Board games were studied using three lines of inquiry. In the first, game boards, which are either privately or communally owned, are located on the islands. The owners were then interviewed about the use and history of their boards. In addition, locations and occasions where game play is taking place, were sought. During the Christmas holidays, the islands that offered several occasions with groups of people engaged in play, were visited. In these cases, observations of game rules and game settings were central with limited occasions for questions in order not to interrupt the players. Finally, in either situation and if the opportunity presented itself, it was helpful to participate in play to gain a detailed understanding of the game and its strategies. All three of these approaches were used in Kiribati but limited to the islands of North and South Tarawa.

This approach cannot answer the question of why people play games, a question that has eluded scholars for over a century (Sutton-Smith, 1997), but may illustrate the context of play in Kiribati society. It documents the often abstract rules of card and board games that in the case of Kiribati, have also been attested in neighbouring

Micronesian countries.

The Regional Understanding of Kiribati Board Games

Board games facilitate interaction like wine and feasting (Crist et al., 2016), but unlike sports, they do not "rely on the circulation of people, media and capital for their endurance" (West, 2014). In Tarawa at least nine card games were found to be popular as well as the board games generally referred to as Sorry!, Checkers, Ludo and Snakes & Ladders. They are a popular choice of interaction, but even though general conversation may also take place, during more complex or competitive games conversations are limited to strategy. When people play games, they are commonly doing so at the exclusion of other social activities such as feasting, drinking or conversing. Other games, such as Chinese Checkers and Carrom, were also attested but the complexity of manufacturing these boards precluded a wider distribution. It suggests that board and card games are specifically chosen for their accessibility, requiring few people and materials, in a society where extensive communal interactions facilitate their advance.

The game of Sorry! is an American proprietary game patented in 1934, that is currently not much known outside the United States. It is a version of Parcheesi but instead of dice, playing cards are used to propel the pieces forward. Ludo and Snakes & Ladders were first marketed in the United Kingdom, based on games found in India during colonial times. They are often found on each side of one board and introduced widely and cheaply across the world on double-sided printed sheets of paper or on plastic versions made in China. The U.S. American version of Ludo is called Parcheesi and has a number of elements that distinguish it clearly from Ludo, mainly the introduction of a second die and an alteration of the board. Similarly, the American version of Snakes & Ladders is called Shoots & Ladders with obvious graphic distinctions as to distinguish it from the UK trademark games. Ludo, Parcheesi and Sorry! are historically related games but with different markets, either British or American. Similarly, Snakes & Ladders and Shoots & Ladders differ very little apart from the markets they are reaching (Murray, 1952; Parlett, 1995; Whitehill, 1998).

The Marshall Islands have a strong link with the United States both politically, for example, the Marshallese island of Kwajalein is used as a military base by the US, and economically, for example, they are using the US dollar as local currency and are allowed to work in the US. Their stores are supplied with multiple American proprietary games that include Sorry! as well as Candyland, Monopoly and others. In contrast, Kiribati is part of the British Commonwealth and uses the Australian dollar as currency with cars driving on the left side of the road. Their stores mainly

have Australian goods rather than American ones, including, for instance, Marmite and white beans as well as Snakes & Ladders. The historical ties and continued interchange between the Marshall Islands and Kiribati have led to a cross-over when it comes to games so that I-Kiribati reported having bought the game of Sorry! on their main island Tarawa while Marshall Islanders have bought Ludo on their main island of Majuro, suggesting that these games were introduced by their neighbours. Although outside the scope of this study, based on interviews with players of the games, this interchange of players and playing materials seems to include the countries of Nauru, Tuvalu and at least part of the Federate States of Micronesia. They are likely part of more general cultural exchanges.

Within Kiribati, the exchanges of players transcend the nuclear family targeted in the marketing strategies for the United States. The I-Kiribati have close ties with extended families, often living together in large households. Family keep in close contact across villages and islands suggesting a larger players' base than in the United States. Within small communities, women are known to gather in the quiet hours to play cards for stakes (Kirion, 1985). They do so at the fish market or near their own homes, significantly extending the players' network. In addition, villagers make use of a *mwaneaba* or meeting house both for socializing and for decision-making at the local level (Kazama, 2001). Tabokai (1985, p. 184) already noted that "In its social functions, the *maneaba* now accommodates such new forms of entertainment as movies, bingo and 'island nights' with string bands." Churches also feature *mwaneaba* (*mwaneaba n te aro*) so that communities, for instance, during Christmas and New Year's, may congregate and stay overnight at a large *mwaneaba* on the island, a place where several board and card games can be witnessed during the quiet hours (see Figure 1). These examples of interchanges between peer-groups explain for an important part how the popularity of games may travel across families, villages and islands without any governing marketing strategy from a games company.

Figure 1. Four men Playing *Kanetita* in a Church *Mwaneaba* on South Tarawa, 2017.

Source: Author

The Games of Kiribati

The games of Kiribati provide a unique case study of contemporary transmission of games since their appropriation is not guided by the games industry. On the contrary, the games that are present in the islands have not been marketed other than that they are sometimes available in stores often without accompanying playing rules. Kiribati players rarely own commercially produced games, although these are not entirely absent from the islands. Boards are commonly homemade, drawn on plywood and using coral or stones as gaming implements. The tools available determine the colour scheme of the board and usually only one or two colours are distinguishable. The game of checkers can be found throughout Micronesia next to Ludo and Sorry!, the other wide-spread board games on Kiribati. Ludo refers to two games, one is the commercial game Ludo and the other is Snakes & Ladders. The popularity of the latter is much higher so that nowadays Ludo mainly refers to Snakes & Ladders. The game of Checkers is mostly played by men while children are more commonly seen playing Ludo. Most people in Kiribati, however, are familiar with Sorry! and this is by far the most popular game on the islands.

In contrast with board games, card decks are all imported using French suits (i.e., Hearts, Diamonds, Clubs and Spades) as is common both in the United States and the British Commonwealth. Games played with cards include many recognizable rule sets, sometimes with their English names, such as <kanetita> as it is spelled in Kiribati (pronounced *kanesta*) "canasta" and <rami> "rummy". At least nine popular

card games were documented to which a series of solitaire games can be added as well. Most card games are played with points and often use small stakes (twenty cents) as opposed to board games, which are only rarely played with stakes. Although men, women and children can be seen playing cards both together and separated by gender and/or age, it seems that elderly women are particularly adept at playing a wide variety of games for stakes. It should be noted that none of the card game rules are written down and that it is no mean feat for any player to be able to distinguish the highly diverse point scales and playing rules within the nine game rule sets that were collected. All Kiribati people that were asked about playing cards confirmed, however, that the games are especially popular together with the abovementioned board games. In addition, although some did not or no longer owned a playing board, they will readily make one if desired while card decks, imported from China (Shanghai), are widely available even on the outer islands of the country.

From the perspective of cultural transmission theory, there are a few expectations. In relatively small communities only a small number of games can be supported. In other words, it is difficult to play so many games all the time unless the community is large enough. It would require an unusual popularity of these games. When games are introduced the playing rules are expected to remain static or simplified to facilitate the retention of diversity. If they become more complicated, then the distribution of that innovation is thought to be limited both over time and across peer groups unless frequent contact and players' interactions are present. The situation of the Kiribati board and card games require the assumption that the games are not only popular but that players from different groups, islands or island groups regularly interact and play each of these games at regular intervals. The complex innovations found in Kiribati illustrate why this should be the case: The relatively complex rules of Canasta were adjusted by the Kiribati players. Since the rules are not written, it is expected that some rules were lost and this would explain, for instance, why not all rules for the black 3s were followed. But the point system was made more, not less, elaborate mostly to complicate the possibility of creating an initial meld in the game. A minimum of 50 points for an initial meld gradually increasing to 90 and 120 depending on one's overall score (1500 and 3000) in the original game was changed to 120 as an initial meld going up to 140 and 160, with lower overall scores (1000 and 2000) that prompted the increase. When encountering four men playing this game, it was found that their initial meld was 180 going up to 200 and 220 indicating that this was not based on confusion concerning the original scores but that players are intentionally introducing a complication in the game. The rules for taking the stock were also made more difficult so that jokers were not allowed for taking a stock and three instead of two matching cards would be necessary when a joker or 2 was added to the pile.

Although these details may sound obscure to those unfamiliar with Canasta, a game that would require several pages of explanation, what is relevant is the process of making a game more complex. Rather than simplifying the rules so that they are more easily memorized and transferred, the game's popularity led to a number of changes that adapted the rules to local tastes. Although one may speculate why these specific changes were made, it is noted that some games, such as Sorry!, became more competitive while others, such as Canasta, adopted rules that leave winning more to chance. The playing rules were subsequently attested in North and South Tarawa, among different players' groups including groups with different age and gender.

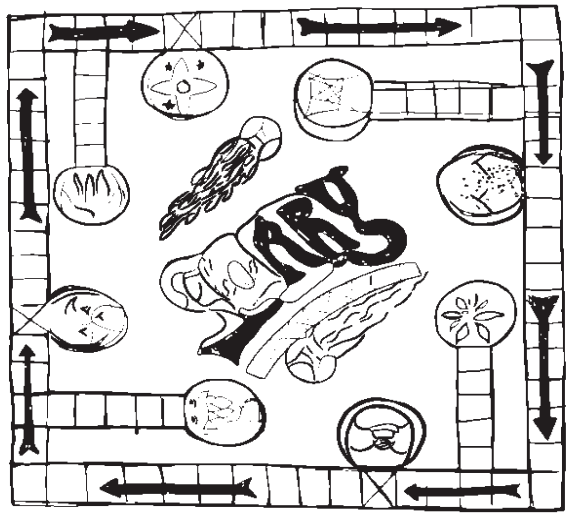
The same process can also be illustrated with their board games. The game of Sorry! is homemade but requires a rather elaborate playing board. It includes so-called slides (represented as large arrows), a specific number of squares, a separate track to one's home square and fields for placing the pieces at the beginning of the game (see Figure 2). The slides have different colours on the commercial version of the game but these are not present on Kiribati boards, hence the slides are used by all pieces instead of those of one colour. The pieces are moved by a draw of the cards but in Kiribati each player is dealt five cards. On each turn a player chooses which card to play (McLeod, 2011).

This innovation turns the game of Sorry! from a simple race game based mostly on chance into a much more strategic game. The values of the cards are identical to those in the original game despite their complexity. Instead more rules are added especially since the game in Kiribati is exclusively played with partners who sit across from each other, only an advanced option in the original game. A playing piece landing on an occupied square of a partner or yourself may move the two playing pieces as one. When such a combination of playing pieces reaches the home of one of them, the two pieces need to be separated, which can only be done with the seven card. Again, the details may escape those who are not familiar with the game but it should be clear that again the complex game board and the detailed rules were not simplified but extended by the Kiribati players. Finally, the game of Sorry!, originally marketed to be played by families and children, is particularly popular among adults in Kiribati whereby men were found to be especially skilled in playing the game fast and strategically.

A final example of a different kind is a Sorry! board (see Figure 3) that was found on Tarawa South with a game that according to the owner was already played on the outer island of Abaiang in the early 1950s. It shows the game of Sorry! surrounded by two more tracks with Snakes and Ladders. Pieces were moved using cards as in

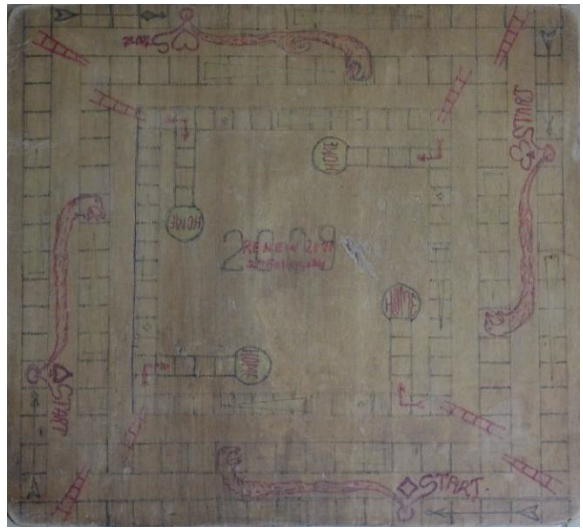
Sorry! but cards 6 and 9, absent in Sorry!, had been added with additional rules and exceptions. In other words, two proprietary games with complex board designs had been integrated into a new board with rules that had minor adaptations to play the full game. This game did not conquer the rest of Tarawa and despite its suggested long history on Abaiang, it was not recognized by most players on Tarawa. Innovation, therefore, was successful only for a limited players' group.

Figure 2. Outline Based on a Kiribati Design of a Sorry! Board. Note the decoration of the 'start' and 'home' fields, the absence of colour for the slides (arrows) and the decorative English name of the game in the centre.



Source: Drawing by Kayla Younkin, 2018.

Figure 3. Homemade Board Design that Includes a Sorry! Track Combined with Tracks used in Snakes & Ladders. South Tarawa, Kiribati, 2017.



Source: Author

Cultural transmission theory allows for local innovations, but sustaining such innovations requires either a particularly large community, organized play or, in the case of Kiribati, remarkable popularity. High popularity and players across peer groups interacting, as opposed to only families, then explains how these rules are consistent across the islands and for several decades. McLeod (2011) mentions similar rules found in Nauru and Tuvalu and this close contact between the islands was confirmed both on Kiribati and the Marshall Islands when it came to checkers. The community of players made innovations, which consistently made the games more complex, mostly to increase the tension in the game by complicating the finish rather than just adding possible strategies.

In the United States and elsewhere, the games are consistently marketed as "family" games. As soon as such games are played across peer groups the demand for innovation increases, particularly when the game is then played among adults. Implementation of a more accommodating marketing strategy that would mimic this structure can be found with the proprietary game "Settlers of Catan" where the players actively communicate with the board game producers to influence the kind of innovations that were brought to the market. In the words of Hirschman, they acted as "family" of the company in that case with "reciprocity in company-consumer relations". But rather than communities of creation, the Settlers of Catan players are seen as "brand communities" (Ouwersloot & Odekerken-Schröder, 2008). In the case of Kiribati, the game producers are absent in the development of the game. The opportunity of a company-consumer relation was not identified and since the games are now homemade, the market has been lost to players who have taken over the process of development.

Implications for Cultural Transmission Theory and Marketing

The study of games in cultural transmission theory has largely focused on game boards in archaeology (de Voogt et al., 2013). Changes in board shape and configuration then allude to possible changes in rules. The Kiribati examples suggest that the basic assumptions and predictions of cultural transmission theory also hold true for game rules and in a contemporary context. This underscores the relevance of the study of Hirschman (2009) and others (e.g., Eyuboglu & Buja, 2007) who have opined that cultural evolution and hence cultural transmission theory is relevant for today's marketing context.

Marketing theories approximate the context of game development in Kiribati with the concept of communities of creation. That concept suggests a company as the

overarching entity of the community. In the absence of the company structure, the community still exists. With the structure of the community (or communities) in Kiribati, it is shown that these players groups can also be particularly innovative and effective in maintaining and distributing a relatively large number of games. With this widening of the concept of community of creation, it shows companies that their role is optional. If a company wishes to stay in control of such a community, it needs to take an active role and cannot assume to reap the benefits of creation automatically. This implication is especially relevant in contexts such as Micronesia where companies have taken only a minor role in marketing and other than distributing their product they do not interact with their consumer base at the risk of losing an entire market as well as the benefit of highly successful product innovation.

The loss of control mentioned above is not due to a lack of marketing theory or practice. Successful implementation of company-consumer relations in the games industry is already present in the Western context (e.g., Pedersen & Buur, 2000). The advance of this study is to generalize a process already recognized in marketing theory but not followed in overseas or non-commercial contexts such as the Pacific Islands. Companies, however, underestimate that the Pacific Islands communities have been especially effective at innovation and due to their close and intensive contacts, it means that their market is not limited to one island or island country but quickly spreads across Micronesia as a whole. This process provides opportunities for all those organizations using marketing, from nonprofits and NGOs to companies, both in Micronesia and the Pacific Islands as a whole.

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Carbon Footprinting and Mitigation Strategies for the USP Marine Campus

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Abstract

The quest for a low carbon footprint (CF) has prompted many institutions around the world, such as universities, among others, to take stock of their greenhouse gas (GHG) emissions. The CF assessment and its reporting are seen as a first step towards sustainability through planning for anthropogenic carbon emissions reduction. Carbon emissions–related activities of The University of the South Pacific (USP) Marine Campus) were investigated and then evaluated for potential reduction opportunities. A CF model for the campus's CO_2e emissions was developed. The results from the model estimated the USP Lower Campus CO_2e emissions to be 2665.8 tCO_2e. The Lower Campus per capita emissions for 2015 amount to about 1.1 tCO_2e per equivalent full-time student (EFTS) and 0.07 tCO_2e per square meter. Scope 3 emissions held the largest share of the emissions (96%). The emissions within scope 3 were largely from student and staff commuting. Besides commuting category, the largest contributor to the overall campus emission was electricity consumption and was recognized as an important source category. A 50kWp Photovoltaic (PV) rooftop system is proposed as an emission reduction strategy for the base case. This would make the campus electricity 100% renewable and entail an annual emission reduction of 12.9 tCO_2e. Other strategies that support environmental and GHG management within the campus are also proposed in this paper.

Keywords: carbon footprint; greenhouse gases; renewable energy; sustainability; The University of the South Pacific

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Introduction

Fiji along with 183 member countries of the United Nations Framework Convention on Climate Change (UNFCCC) submitted their Intended Nationally Determined Contribution (INDC) prior to the 21st Conference of Parties (COP21) in Paris, which highlighted the new universal climate change agreement. The INDC is a climate action plan submitted to the UNFCCC which is a synopsis of carbon emission–reduction targets each country is committed to (World Resource Institute, 2016). Fiji's INDC report aims for a 30% reduction in carbon dioxide emissions in contrast to a business-as-usual scenario by 2030 (IISD, 2015). Some 20% of target reduction is to be achieved through moving towards a nearly 100% renewable energy–based electricity grid and the remaining 10% through energy-efficiency measures. Meeting the INDC will be a leap towards fostering sustainable development and green growth. Carbon footprint (CF) analysis could be instrumental to this, giving a tangible figure for setting goals, implementing measures, and tracking progress. This research on CF and mitigation strategies for the University of the South Pacific (USP) Marine Campus is framed within this larger national goal.

CF is a growing field that is gaining much support in connection with climate change–mitigation efforts. Linking this to the "global stocktaking," CF at smaller scales can be seen as a building block for keeping global warming below 1.5–2 °□C. Hence, such studies are important to create a knowledge base that can greatly reinforce our commitment and is imperative to reducing emissions.

This paper shows that CF reporting for the USP Marine campus is a step towards its campus greening effort and an opportunity to be on a par with other universities that are reporting greenhouse gas (GHG) emissions. An important component was developing a GHG emissions–calculation model for the campus. This model can therefore be applied to other USP campuses throughout the region as well as other academic institutions and organizations.

Carbon Footprinting

The concept of CF has been intrinsically linked to the increased levels of carbon dioxide in the atmosphere. Its importance in the public domain is to raise public awareness on climate change and global warming. Weidmann (2009) describes CF as a sustainable development indicator of the GHG emissions resulting from human activities. CF, which is a quantitative expression of GHG emissions from an activity, can help in emissions management and evaluation of mitigation measures (Williams et al., 2012). This would also mean environmental efficiencies and cost-reduction measures being emplaced to manage emissions. The term CF originated out of

"ecological footprint" proposed by Wackernagel and Rees (Weidmann, 2009). Despite the term "carbon footprint" emanating from the concept of ecological footprint, it has emerged into a concept in its own right due to growing concerns of global warming and climate change. Literature in the public domain shows that a general consensus on CF is that it is "concerned with the measurement of direct and indirect GHG emissions resulting from human based consumption and production practices" (East, 2008).

A scientific definition of CF has yet to be developed; however, the methodological approach for CF determination has been classified in to two main areas—the life cycle assessment (LCA) for product CF and the corporate-based analysis for corporate CF (Alverez et al., 2016). In essence, CF determination is based on analyzing and accounting for the carbon dioxide and other GHGs emitted from processes, practices, and events. Recent development in the studies and methods of CF have acknowledged including other GHGs in the calculations and not just CO_2. This ensures that the activity being "footprinted" is consistent with standards of international agreements such as the Kyoto Protocol. Thus, a majority of the entities have expressed the CF as carbon dioxide equivalents (CO_2e).

There is a range of standards for GHG accounting published by the International Organization for Standardization. The GHG Protocol was the first standard to define CF at an organizational level (Barnett et al., 2013). The ISO14064, which is based on the GHG Protocol, includes the method for the quantification of GHGs at a product and organizational level, as well as providing methods for verifying the quality of data used to calculate emissions (Barnett et al., 2013). These standards also include the seven GHGs listed in the Kyoto Protocol (Rich, 2008). These are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF_6), and nitrogen triflouride (NF_3). Each of these gases have distinctive global warming potentials. This factor is used to convert non–carbon dioxide gases to CO_2 equivalents. The standards also categorize the direct and indirect emissions into three scopes, as recommended in the GHG Protocol: scope 1, scope 2 and scope 3 (GHG Protocol, 2004). Scope 1 includes direct emissions, scope 2 and scope 3 are known as indirect emissions. Scope 1 emissions refer to the direct emissions from sources owned and controlled by the reporting entity or occurring within the organizational boundary. Scope 2 includes emissions from purchased electricity, gas, or heat, whereas scope 3 includes emissions resulting from activities utilizing sources that are not owned by the reporting organization (WRI/WBCSD, 2004).

The two methodological approaches that can be utilized to undertake the task of calculating CF are Process Analysis (PA) and Environmental Input-Output (EIO)

analysis (Wiedmann & Minx, 2008). PA is a bottom-up method designed to capture the environmental impacts of individual products from 'cradle to grave'. Due to its bottom-up nature, it faces a system-boundary problem and therefore the need for identification of appropriate system boundaries to minimize truncation errors (Larsen et al., 2012). This approach can become cumbersome when accounting CF for larger entities. However, it is suitable when looking at micro systems, for example a particular process, an individual product, or a relatively small group of individual products. In comparison, EIO analysis, which is a top-down approach to CF, evaluates the linkages between economic consumption activities and environmental impacts (Kitzes, 2013). This approach is superior to PA for calculating the CF in macro and meso systems, such as that of industrial sectors, individual businesses, larger product groups, households, governments, or the average citizen (Kjaer et al., 2015).

CF studies of most of the universities (Lancaster University, De Montfort University, Yale University, The Norwegian University of Technology & Science (NTNU), The University of Illinois, Chicago (UIC), University of Cape Town (UCT)), and the one applied in this work have hybridized the models to suit their institution in terms of structure, size, and organization. In general, the EIO methodological approach has been adopted, which is the recommended approach for entities such as universities and colleges. A study of the available literature on the CF of universities and organizations highlights three basic steps required for quantifying carbon dioxide and carbon equivalent emissions. The first step is to establish assessment boundaries. This involves organizational and the operational boundaries and the identification of the GHGs that will be accounted for. The second step is data collection and the final step is calculating the emissions using appropriate emission factors.

Review of University CF Assessments

The methodologies for CF vary depending on the purpose, availability of data, and measurement boundaries (Chakraborty & Roy, 2013). There are a number of tools and commercial services that have been created to support campus GHG inventory efforts. The most popular one amongst universities is the Campus Carbon Calculator (CCC) developed by the Clean Air- Cool Planet (CA-CP), a US-based organization (Klein-Banai et al., 2010). The scopes for this tool are based on the framework developed by the GHG Protocol Initiative (Hough et al., 2008). More than 200 campuses in North America have conducted their CF using the CCC (Klein-Banai et al., 2010). The CCC calculates the estimated emission from the data collected using MS Excel workbook.

Despite the ease of use of this tool, some campuses have designed their own tools

based on the GHG Protocol developed by the World Resource Institute (WRI). A drawback of the CCC is that it fails to account for emissions from purchased goods and services, which is part of scope 3 emissions and which is an important source, considering the nature and activities carried out by universities (Clifford & Cooper, 2012). The environmental impacts that goods and services have during their entire life-cycle need to be accounted for in order to quantify scope 3 emissions (Thurston & Eckelman, 2011). However, studies reveal that it is fairly difficult to measure scope 3 supply-chain emissions due to limited access to detailed manufacturing information for each of the products procured by the university, as well as the lack of resources to investigate the supply chain of each product. Therefore, rationalized methods can help campus sustainability groups estimate embodied emissions so that the impacts of such GHGs can be measured and managed (Thurston & Eckelman, 2011). Table 1 shows an overview of methods employed by various universities and the results obtained for each of the scopes.

Thurston and Eckelman (2011) focused on GHG emissions resulting from procurement at the Yale University. In their assessment they employed the Economic Input-Output-Life Cycle Assessment (EIO-LCA) tool developed by the Green Design Institute at Carnegie Mellon University. It works by "using the dollar value of a purchase from a specific sector in the USA to calculate the impacts created by the entire supply chain for that purchase.... results are expressed in terms of environmental impact per dollar of output" (Thurston & Eckelman, 2011, p. 228). According to Hendrickson et al. (2006), the drawback of this model is that the differences between items within a single sector are impossible to distinguish, apart from using differences in price—which means that "all goods and services within a sector are considered identical in terms of GHG emissions per dollar procured, regardless of their physical makeup or functionality of the location where they were produced" (Doyle, 2012). Another limitation is that the model is only dependent on the monetary value. For instance, if one negotiated a lower price for an item, it would mean that the environmental impact of that purchase is also lowered. Thirdly, since the EIO-LCA method is specific to a country, accounting for imported goods would be challenging: "These goods are assumed to have the same production characteristics as comparable products made in the same interest" (Doyle, 2012). The problem with this assumption is that accuracy of the model is compromised for countries with large imports.

Ozawa-Meida et al. (2013) investigated the CF for De Montfort University in a consumption-based study that included the scope 1, scope 2, and scope 3 emissions under the classification of the WRI/WBCSD GHG protocol corporate standard. The main analysis categories in this study that are relevant to most universities are: (a) building energy—direct emissions from University buildings and equipment; and (b)

travel—direct and indirect emissions from the movement of people (i.e., staff and student commutes, business travel, students' trips home, and visitor travel) (Ozawa-Meida et al., 2013). The basic CF approach was used in the analysis, which comprises the following 3 fundamental steps (Ozawa-Meida et al., 2013):

Step 1: determine activity/consumption data in each sector (kWh used, km travelled/ money spent)
Step 2: derive associated GHG-emission factors (kg CO_2e/ KWh used, kg CO2e/km travelled or kg CO2e/passenger kilometer, and kg CO_2e/£spent)
Step 3: multiply activity/consumption data by the corresponding emission factors to estimate the emissions in kg CO_2e for each sector and sum up to obtain the overall carbon footprint:

$$GHG = activity/consumption\ data * emissions\ factor \quad (3)$$

The NTNU also investigated their CF using the Environmental Extended Input-Output (EEIO) modelling, which covered all aspects of the university's activities. This is part of the Input-Output Analysis that was introduced in the 1930s (Munksgaard et al., 2005). With the inclusion of environmental related information, it evolved to become the EEIO-based modeling. According to Larsen et al. (2013), CF inventories for many universities apply bottom-up data collection in conjunction with fixed CF intensities attained from online carbon calculators. The problem with these studies is that only selected indirect scope-3 emissions are accounted for (Baboulet & Lenzen, 2010). Hence, these studies are not comparable to those applying the EEIO modeling. The EEIO modeling is deemed as the most suitable in calculating CF of universities, since it includes all aspects of university activities, particularly procurement, which is part of scope-3 emissions (Pandey et al., 2010).

The EEIO is more effective than LCA on the grounds that it also accounts for services. Since universities are service-oriented organizations, EEIO is a more useful tool (Larsen et al., 2013). The EEIO modeling also utilizes a standardized format that is country-specific. It has also proven to be an efficient and reliable means of calculating the total CF relative to LCAs, which are more detailed, yet time-consuming. The downside of the EEIO model is that it is lacking in detail (Klein-Banai et al., 2010). The models are also a couple of years old and changes in the production technology have not been captured fully. The EEIO model is also not useful when in it comes to implementing mitigation actions, since it does not capture specific data, which is vital for keeping track of the effect (Letete et al., 2011). Therefore Larsen et al. (2013) in the study of CF for NTNU have hybridized the model for all scope-1 and scope-2 GHG emissions. This model is similar to that used for municipalities (Larsen et al., 2010) but has been refined for greater suitability to

a university. An important aspect of the EEIO model is to match the data from financial accounts to the EEIO sectors. The compound method by Alvarez (Alvarez et al., 2004) also incorporated the EEIO model in their calculation of CF for the University of Madrid. From their findings, they claim that results are comparable to the results of the universities that used a similar approach and that the model is simple and easy to understand.

The CF results of the university CF reports analyzed reveal that scope-3 emissions dominate CFs (Table 1). This, however, is not apparent for UIC and UCT and is due to the fact that these universities employed the PA method in their analysis, whereby a number of scope-3 emission sources are excluded, thus causing a considerable cut-off error in the results.

As seen from previous works, there are a number of steps involved in deducing the CF of institutions. Studies reveal that the main purpose of universities conducting a CF study was for it to serve as a basis for their GHG-reduction plans and to uphold their commitment towards sustainability goals—for example, Lancaster University, De Montfort University, Yale University, The Norwegian University of Technology & Science, The University of Illinois, Chicago, and The University of Cape Town. In each of those studies, the boundary of measurement and the scopes of emissions were clearly categorized and defined and were generally consistent with the GHG protocol. Moreover, it can be noticed that the methodology employed is dependent on the purpose of the enquiry and the accessibility and availability of data and resources. It is also important to note that assumptions, averages, and estimates are an important part of the measurement processes. In addition to this, the models and results obtained for the different universities are dependent on the function, institutional structure, and size of the organization. Therefore, in evaluating the CF of a university, it is important to clearly specify system boundaries, identify the sources of emission, and categorize them in respective scopes and use appropriate emission factors.

Table 1. University CF assessments.

Reference	Case study	method	CF (tCO_2e)	Carbon footprint (%)		
				Scope 1	Scope 2	Scope 3
(Carbon Management Plan, 2011)	Lancaster University (LU)	HLCA	71,700	21	23	56
(Ozawa-Meida, et al 2013)	De Montfort University (DMU)		51,080	6	15	79
(Thurston and Eckelman, 2011)	Yale University (YU)		874,000	19	5	76
(Larsen, et al 2010)	The Norwegian University of Technology & Science (NTNU)	EEIOA	92,100	19		81
(Klein-Banai, et al 2010).	The University of Illinois, Chicago (UIC)	PA	275,000	64	17	19
(Letete et al., 2011)	The University of Cape Town (UCT)		84,926	81		19

Source: Authors' compilation

Case Study: USP Marine Campus (Lower Campus)

The University of the South Pacific, established in 1968, is the leading university for the Pacific region, jointly owned by the governments of 12 member countries: Cook Islands, Fiji, Kiribati, Marshall Islands, Nauru, Niue, Solomon Islands, Tokelau, Tonga, Tuvalu, Vanuatu, and Samoa. The university has a total of 14 campuses spread throughout its member countries. Its main campus is the Laucala campus, which is situated in Fiji.

The Laucala Campus comprises the Upper Campus, Middle Campus, Marine (Lower) Campus, and Statham Campus. The University's Laucala Campus has a total of 148 buildings distributed across four locations. USP headquarters at Suva comprises the Main Campus (114 buildings), Lower Campus (19 buildings), Statham Campus (7 buildings), and Middle Campus (8 buildings).

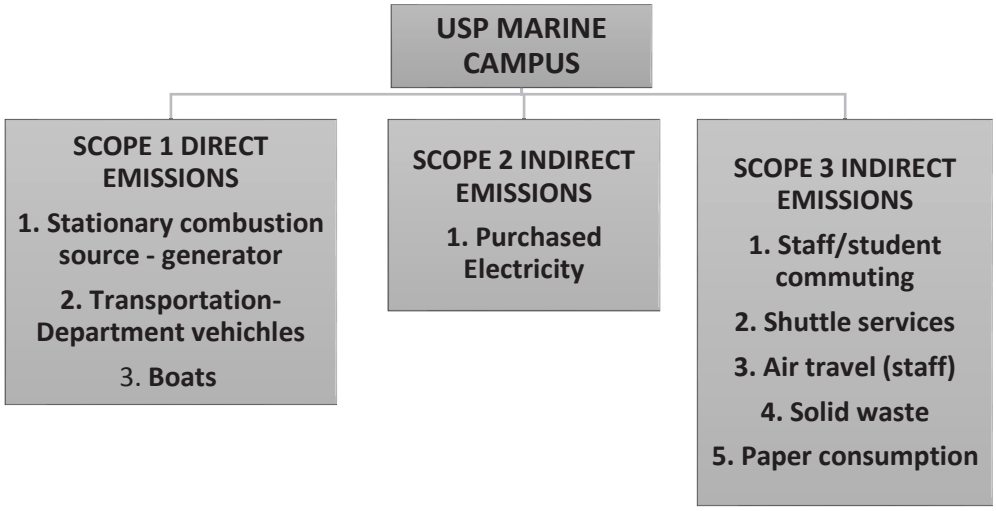
The focus of this report is the Laucala Lower Campus, which is situated along the Suva Point foreshore facing Laucala Bay (Figure 1). It is the location of USP's Marine Studies, Institute of Applied Sciences, Pacific Centre for Environment & Sustainable Development, and Institute of Marine Sciences, School of Geography as well as Marine Lodges. The campus has an area of 39659.2 m^2. This inventory was assembled by collecting and analyzing utility data, compiling university records, and conducting discussions with staff. The GHG emissions were compiled using bottom-up data acquisition, entry calculations, and management. The scope and boundary for GHG emissions analysis is presented schematically in Figure 2. This was done in accordance with industry-recognized standards for GHG emissions accounting, namely:

- 2006 IPCC Guidelines for National GHG Inventories
- *Greenhouse Gas Protocol (GHG Protocol), A Corporate Accounting and Reporting Standard*, Revised Edition, World Business Council for Sustainable Development (WBCSD) and World Resources Institute (WRI) (The Greenhouse Gas Protocol, 2004).
- GHG Protocol, Corporate value chain standard (WRI/WBCSD. 2004).
- EPA Simplified GHG Emissions Calculator (SGEC)

Figure 1. Google Earth image of the Marine (Lower) Campus.

Source: Google maps

Figure 2. USP Marine Campus operational boundary.



Source: Authors' compilation

Data Collection and data preparation in the model

Scope 1: Vehicle fleet, boats, and diesel generator

This scope presents two emission categories: direct transportation sources and on-campus stationary sources. The direct transportation sources are the vehicles and vessels that are at the Marine Campus and have been allocated to the departments. The IPCC methodology was used for emission calculations for this scope. Fuel-use data was available for the year 2015 and was provided by the respective departments

and data from the Procurement Office was used to validate this information. For the department vehicles, fuel consumption (purchased fuel) was recorded in litres of diesel consumed for the base year. In the IPCC 2006 software, department vehicles were classified under *'Fuel Consumption Activity—Light-duty Trucks'*. For on-campus stationary sources, two diesel backup generators fell under this category. Fuel-use data in litres, model, and the amount spent per annum on the generator was available for the year 2015. This information was provided by the Properties and Facilities Department. In the IPCC 2006 software, this activity was classified under *'Fuel Consumption Activity—Stationary'*. Diesel is referred to as Gas/Diesel Oil under the IPCC guidelines.

The average density data for the fuel type was used to convert the volume (litres) to weight. This was taken from the *BP Statistical Review of World Energy* (2016). Energy from the fuel type was calculated based on the energy content values provided in the IPCC 2006 software provided in the table below (Table 2).

Scope 2: Purchased electricity

The electricity generated from the installed 45kW Solar PV system was not part of this calculation. Since electricity is purchased from the Energy Fiji Ltd. (EFL), the emission factor is 0.5095 tCO_2/MWh (CDM, 2006). This emission factor is specific to the fuel mix that FEA uses and was taken from the calcutions for Fiji Nadarivatu Hydro power project under the Clean Development Mechanism (CDM).

Scope 3: Commuting

A commuting survey for the students and staff was carried out to gather information on the distance, vehicle type, and mode of transportation for the one-way commute to the campus. Considering the large number of students, an online survey was designed through Survey Monkey and distributed via the student emails. As for the staff, survey forms were distributed to the school department secretaries, to be distributed to the staff and, where possible, staff members were personally approached with the survey forms. The data accuracy for the online survey was compromised since exact data about the number of kilometers travelled for each transportation source could not be extracted; however, estimated distances were used. The uncertainty for staff commuting can be said to be lower than that for the student commute, since the forms could easily be categorized according to mode of transportation with the distances.

Table 2. Data Table: Scope 1

Fuel consumption activity	Fuel type	Quantity (L)	Energy content (TJ/Gg)	Emission Factor (Kg CO_2/TJ
Stationary	Gas/diesel oil	12115	44.3	74100
Light-duty trucks	Gas/diesel oil	4017	43	74100
Domestic water-borne navigation	Gasoline	500	43	69300

Source: Authors' compilation, based on IPCC (2006)

Staff commuting study methodology

The motorized commuting modes, and distances for each of these modes, were considered for emissions calculation. The survey yielded a response rate of about 26%. Since some of the staff would use different modes of transportation in a typical week, the main motorized commuting modes were considered; passenger car, bus, and taxi. For those staff members who indicated that they commuted by two different modes in a typical week, emissions were accounted for the full 5 working days per week for each mode, since there was no way of knowing on which days a particular mode was used for commuting. For the commuting distance, the upper limit was considered in the calculation so as to account for under-representation of the sample size. The commuting distance was grouped with its corresponding mode of commute to find the passenger km distance for each mode.

Student commute survey study methodology

To calculate GHG emissions related to travel, information on the trip characteristics are required. Of the 612 respondents, 392 indicated the use of a motorized mode of transportation. The trip characteristics of these emitters include: mode, vehicle type, and distance traveled. Since the respondents were only asked about their commute behavior to the lower campus, it is assumed that this would be the same for the return trip. The link to the survey was distributed via email to 2,300 undergraduate students and 147 postgraduate students. The survey was left open for a period of 3 months, from January 2016 to March 2016. Irrespective of the fact that this scope 3 emissions inventory was for the calendar year 2015, the 2016 time period was deemed representative of commuter behavior at the university for 2015. A total of 2,447 email invitation links to survey monkey were distributed to students. This is also assumed to be the total student population of the USP

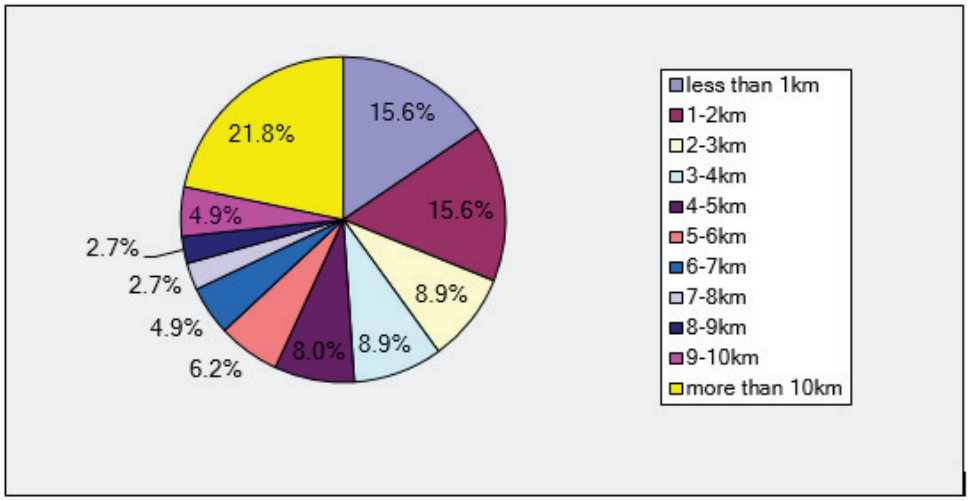
Marine Campus. Of the 2,447 surveys distributed among the student population, 612 responses were obtained by the closing date of the survey, yielding an overall response rate of 25%. This was comparable to other studies (Mathez et al., 2013; Paez & Whalen, 2010). The student responses were analyzed using Survey Monkey.

The students were categorized according to their mode of transportation. Those who commuted via motorized vehicles were further classified according to the vehicle and fuel type. Then, for each motorized transportation mode, the estimated one-way commuting distances were calculated based on the respondents' estimated distances (Figure 3). This value was recorded as "passenger-km." It can be assumed that since a majority of the respondents are face-to face students, the average number of commuting days were four. Given that a semester comprises 15 weeks, the total number of commuting days in a year were 120 days. Finally, the result was multiplied by 2, accounting for the trip to the campus and trip back home.

Student commute

The average fuel efficiency in Lge/100km for non-Organisation for Economic Cooperation and Development (OECD) countries was the used to convert total distance travelled in km for each motorized mode of vehicle type to volume (litres) (Table 3).The average density data for the fuel type was used to convert the volume (litres) to weight. This data was taken from the *BP Statistical Review of World Energy*, 2016. Energy from the fuel type was calculated based on the energy content values provided in the IPCC 2006 software.

Figure 3. Responses of estimated distances for one-way commute analyzed in Survey Monkey.



Source: Authors' compilation

Table 3. Fuel Economy for non-OECD countries

Vehicle type	Fuel efficiency (*Lge/100km)
Passenger vehicle	6.22
Light duty	6.47
Heavy duty	7.54
Bus	8.30

*Lge – Litre in gasoline equivalent terms. This energy unit is used for different fuels such as gasoline and diesel on energy equivalent basis.
Source: Authors' compilation, based on Global fuel economy initiative (GFEI, 2011)

Scope 3: Purchased Paper

Activity data on the quantity of paper purchased was obtained from the different departments. The average data approach from the GHG Protocol was used to evaluate the emissions. The mass of the total number of sheets and rolls purchased is multiplied by the Emission Factor (EF) for printing paper and toilet paper, respectively. The EF is based on published data rather than taken from onsite measurements directly. Published data on paper is sparse, therefore the data used in this report for purchased paper is based on studies from UK and thus it may not be representative of activity in Fiji. Hence, the data should be viewed with caution. Emission factor was obtained from the 2012 Guidelines to Defra / DECC's GHG Conversion Factors for Company Reporting (DEFRA, 2012).

Staff air travel (USP Business)

Each of the departments was requested to provide details of its business air travel. The necessary information was the number of persons and the trip destination. Some departments were able to provide this information; however, where gaps in data occurred the procurement office provided the necessary information.

The International Civil Aviation Organization (ICAO) carbon emissions calculator was used for estimating the volume of carbon emissions (CO2) generated by a passenger in a flight. The ICAO methodology uses a distance-based approach to estimate an individual's aviation emissions. The calculator uses a formula based on fuel combustion and employs industry averages for the various factors that lead to the determination of emissions associated with a passenger's air travel. The data required for input in the ICAO carbon emissions calculator are the airports of origin and destination. In particular the airport codes were entered. The database is then searched for all flights serving that city pair. The tool however does not compute total emissions for connecting flights. Thus, each of the journey legs were calculated separately and then added up.

USP shuttle services

The USP shuttle services are provided by the shoreline bus operators. The shuttle makes about 70 trips per week. Considering that the university has two semesters per year, each semester having 14 weeks, the total number of trips would then be 1,960 trips per year. On average, the number of passengers per trip is 10 and the approximated distance between the Main Campus and the Marine Campus is 1km. With this information, passenger km can be calculated and multiplied with the default emission factor.

SWD

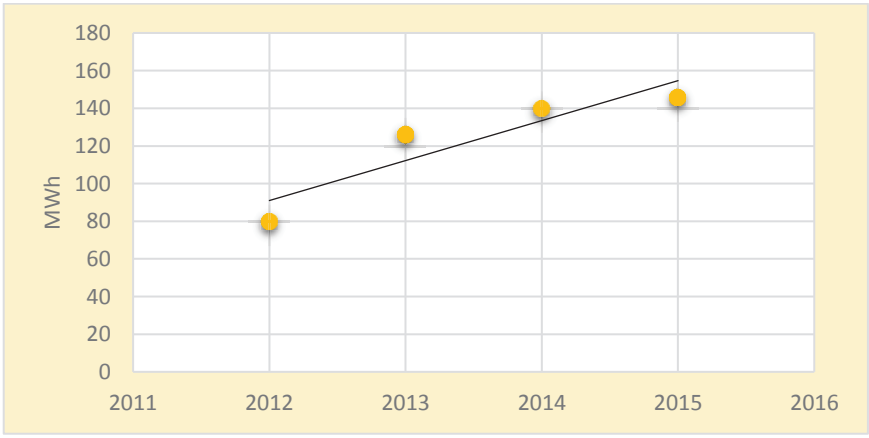
Before the collection days, garbage from the collector bin was sorted into the waste categories proposed by the IPCC. After sorting, wastes from each category were weighed. This value was then multiplied by the default value for each degradable organic compound.

Carbon Footprint Results and Discussion

Campus energy emissions

Figures 4 and 5 show the annual electricity consumption and the associated carbon emissions, respectively, for the Marine Campus from 2012 to 2015.

Figure 4. Trend of electricity consumption at lower campus

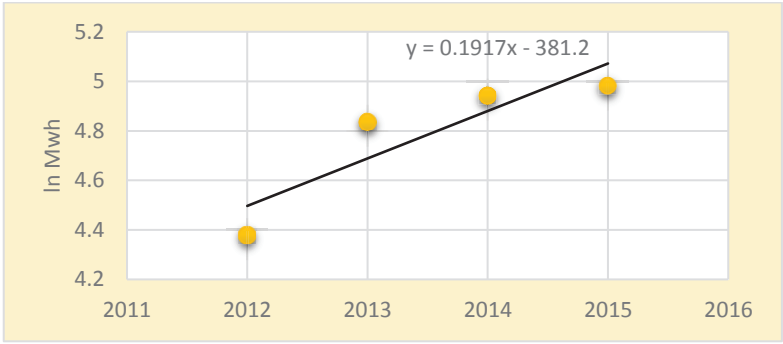


Source: Authors' compilation

A logarithmic graph of electricity consumption in Figure 4 shows an annual increase of 19% pa, which is relatively high. This, however, coincides with the rate of increase in the number of students. The graph also suggests that there has been only a slight increment from 2014 to 2015. Personal communication with the Properties and Facilities Maintenance manager suggested that some energy efficiency measures had been

undertaken from 2014.

Figure 5. Logarithmic trend of electricity consumption



Source: Authors' compilation

The electricity consumption in kWh were converted to CO_2 using the emission factor of 0.5095 tCO_2/MWh obtained from the CDM Fiji Nadarivatu Hydropower project (CDM, 2006) (Figure 6). For the base year 2015 the CO_2 emissions from electricity usage was calculated to be 74 tCO_2 per annum.

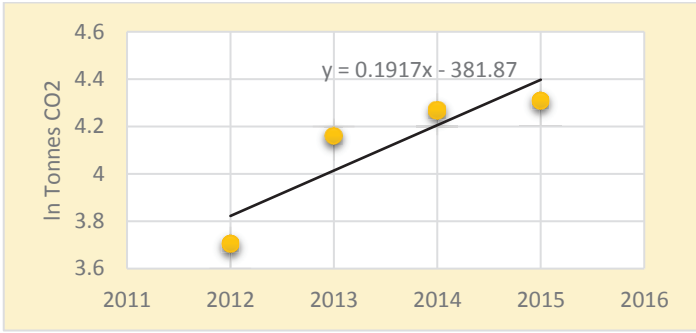
Figure 6. Carbon emissions trend from electricity consumption at Lower Campus

Source: Authors' compilation

The logarithmic plot of CO_2 emissions (Figure 7) suggests an annual increase of 19% pa, which is similar to kWh increase.

The emission per capita from direct energy consumption for 2015 amounts to about 0.03 tons CO_2 per student (EFTS). When compared with the different universities, this is well below the average value of 8.4.

Figure 7. Logarithmic graph of Lower Campus CO_2 emissions

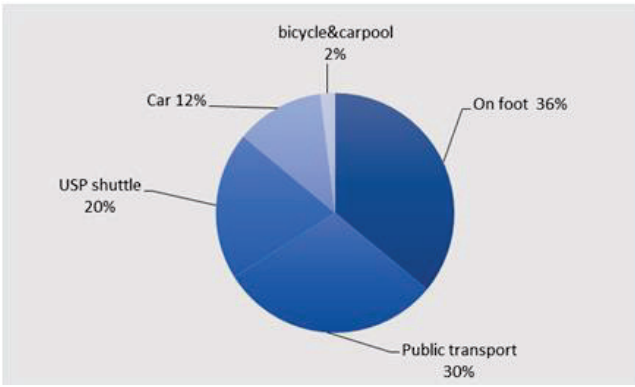


Source: Authors' compilation

Student commuting

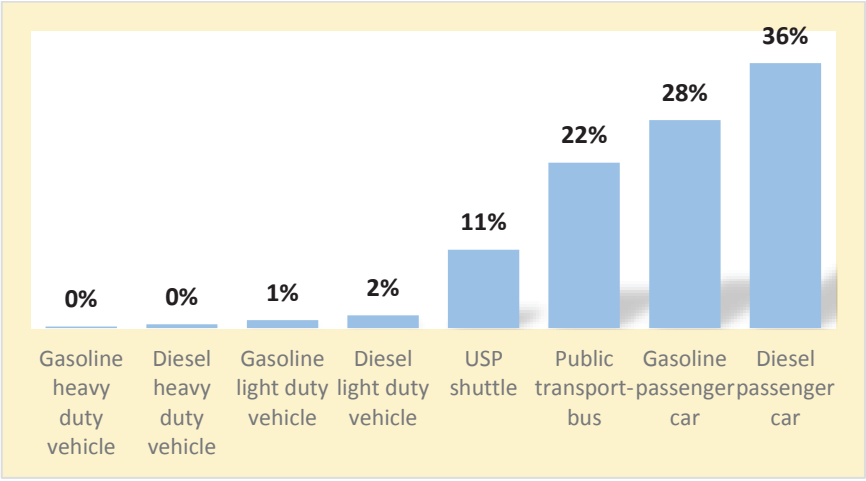
The student commute emissions for the year 2015 was about 2166.56 tCO_2e (Table 4). This is about 73% of the total inventory. From the survey sample, a summary statistic was generated for the common modes of transportation and the distance. The mode of transportation of the sample population was 36% of users commuting on foot, 30% by bus, 20% via the USP shuttle, 12% by passenger cars, and 2% by carpool or bicycle.

Figure 8. Distribution of daily commuting modes by students



Source: Authors' compilation

Figure 9. Distribution of GHG emissions of students commuting by motorized vehicles to Lower Campus

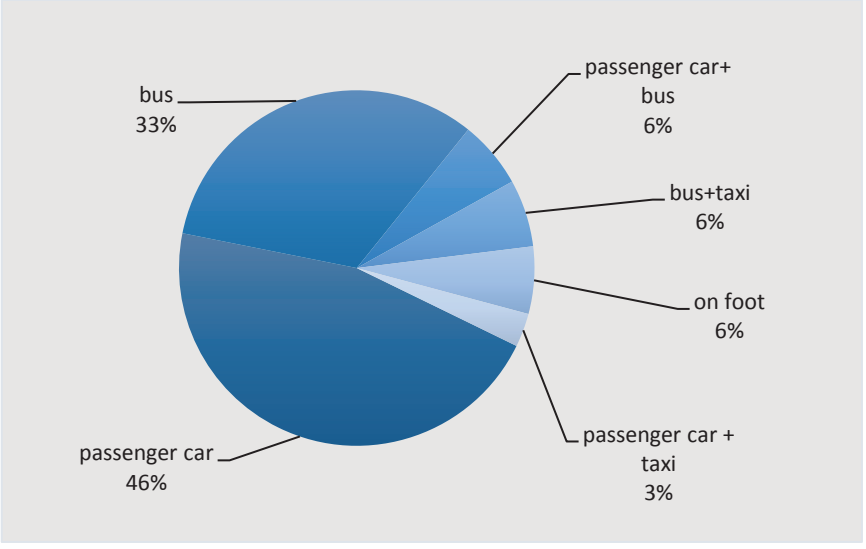


Source: Authors' compilation

Staff commuting

GHG emissions from staff commuting represented about 13% of the overall emissions. Total emissions was estimated to be 332.94 tCO_2e. The distribution of daily commuting modes by staff is given below in Figure 10.

Figure 10. Distribution of daily commuting modes by staff

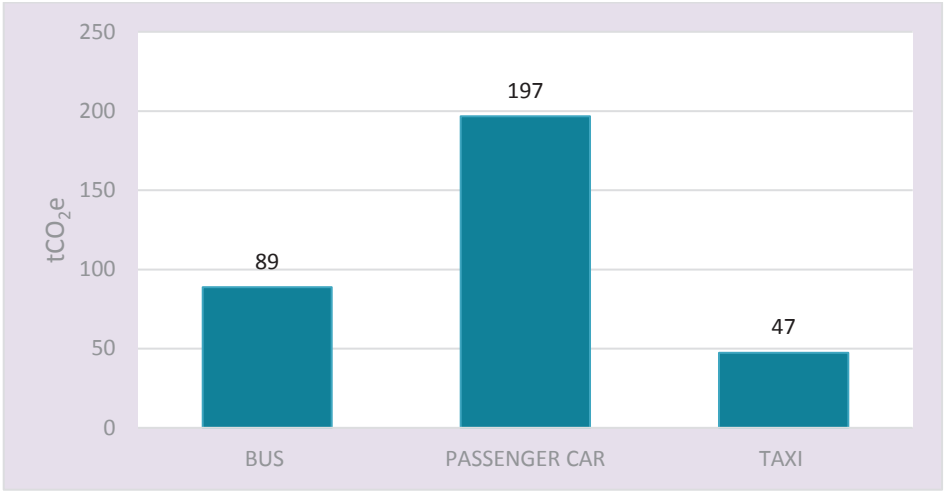


Source: Authors' compilation

The number of staff commuting by passenger vehicle and bus are about 46% and 33%, respectively, yet the emissions for these modes vary largely, passenger vehicles having a very large share of emissions in contrast to emissions by bus commute (Figure 11). Thus, commuting

daily by bus is a greener and also a more economical option.

Figure 11. Staff commuting emissions for different transport modes.

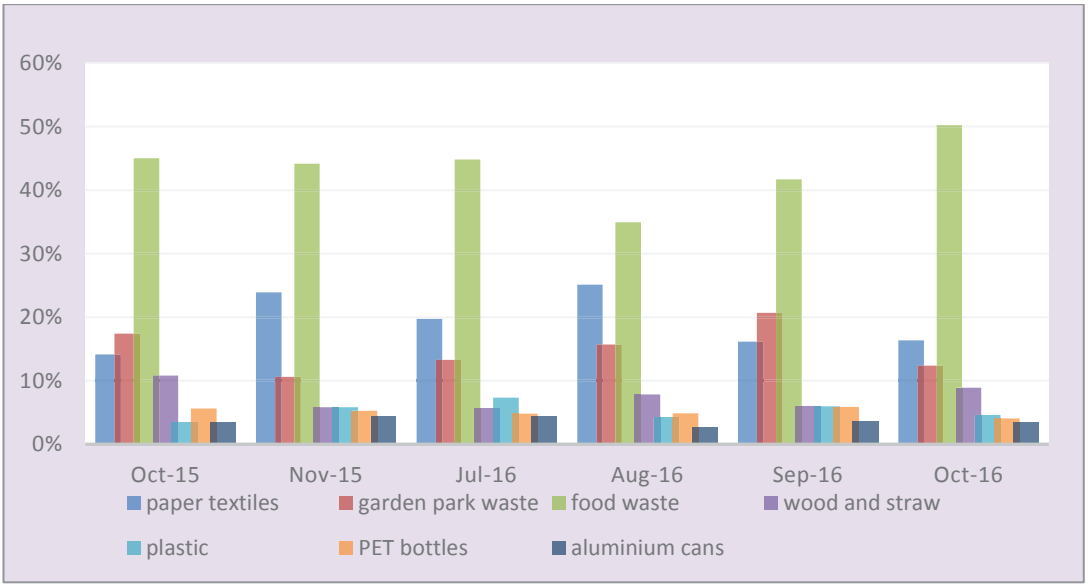


Source: Authors' compilation

Scope 3 emissions: Municipal Solid Waste (MSW)

Data was collected on the percentage weight for the main waste streams as specified by the IPCC default method for 6 different months (Figure 12). The degradable organic wastes were used for methane emissions calculations based the IPCC default method and the default values used in the GHG Inventory for Waste for Fiji's Second National Communication.

Figure 12. Bar graph showing proportions of solid waste at Marine Campus

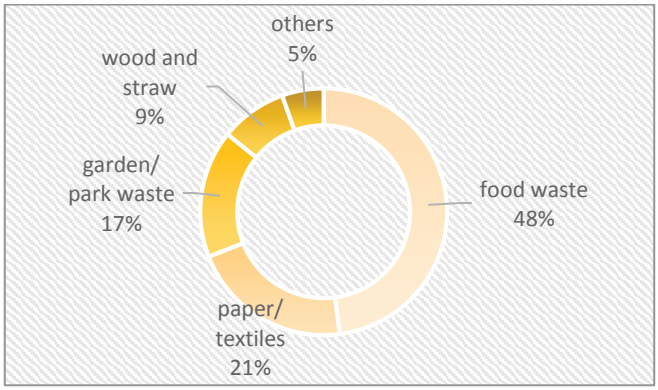


Source: Authors' compilation

Figure 13 (below) shows that a majority of Lower Campus degradable organic waste comprising food waste (48%) followed by paper/textiles and garden park waste.

Using the IPCC default method, methane emissions from MSW for the USP Lower Campus was estimated to be 0.036 tCH_4/yr for the base year 2015. Fiji's average methane emissions from Solid Waste Disposals (SWDs) is about 3.12 Gg (Fiji Second National Communication, 2013). The USP Marine Campus accounts for about 0.001% of the country's CH_4 emissions. Using the global warming potentials value of methane, which is taken as 28, the MSW emissions in carbon-dioxide equivalent is calculated to be 1 tCO_2e/yr.

Figure 13. Distribution of different degradable organic compounds

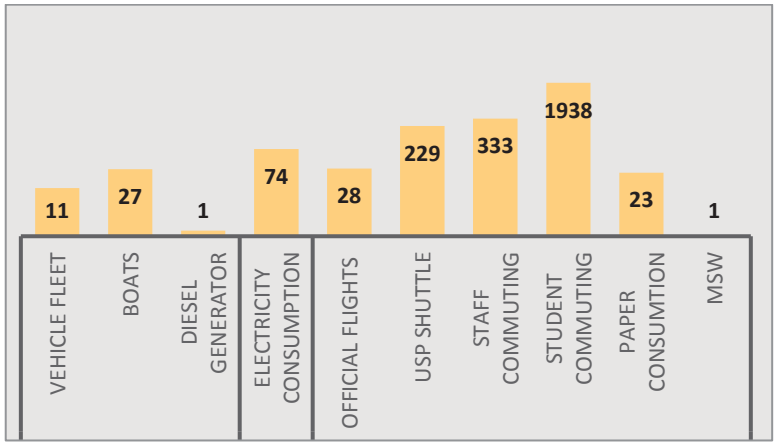


Source: Authors' compilation

Net Emissions for the Campus

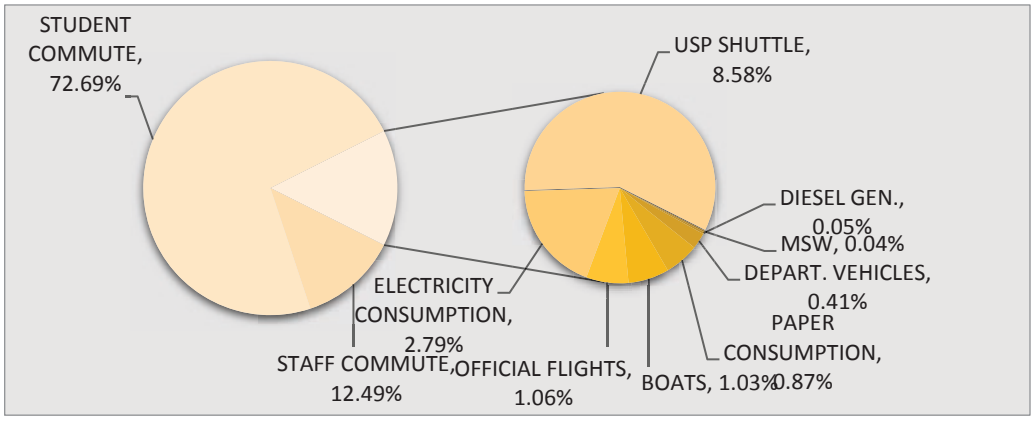
The USP Marine Campus GHG emissions for the year 2015 were estimated to be 2665.8 tCO_2e. The campus's activities that were assessed and the percentage emissions released are shown in Figure 15. The results of the model indicate that the greatest source of emissions is from student commute. This accounts for approximately 73% of all emissions. Staff commute constituted about 13%, whereas other emission categories made up the remaining 14%. Figure 14 is an overview of the USP Lower Campus CF contribution by tons of CO_2e of the different emission source categories. Emission categories that are greater than 0.5% are considered significant contributors (Letete et al., 2011).

Figure 14. Tons of carbon dioxide equivalent for the USP Lower Campus for the base year 2015.



Source: Authors' compilation

Figure 15. Contribution (%) of the different emission sources to the overall GHG emissions

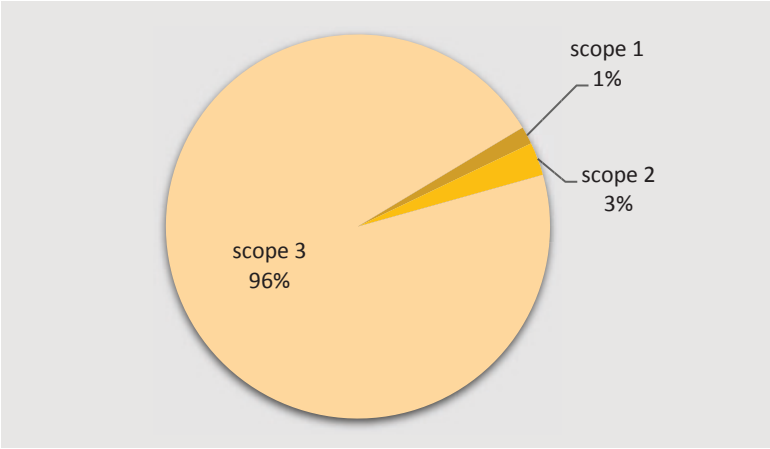


Source: Authors' compilation

Emissions under scope 1 were around 39.59 tCO_2e. This is about 1% of the overall emissions. Scope-2 emissions at 74.27 tCO_2e represented 3% of the total emissions. Scope-3 emissions were the largest contributor, with emissions of approximately 2550.95 tCO_2e, making up 96% of total emissions (Figure 16). Compared with other universities, the magnitude of scope-3 emissions are generally high, for instance: De Montfort University (79%), University of York (61%), and Erasmus University Rotterdam (80%). For Erasmus University Rotterdam (EUR), student and staff commuting are the main sources of scope-3 emissions, which was also the case for the USP Marine Campus. The average student commuting emissions for EUR was 0.42 tons of CO_2/student/year as compared with 0.27 for the Marine Campus. A factor which can influence this difference is the number of commuting days; for instance, students at EUR spend 40 weeks per year as compared with 30 weeks for

USP Marine Campus students. The smaller magnitude of scope-1 and scope-2 emissions obtained for the Lower Campus is due to the small size of the campus and the climate. With only a few buildings, which means less energy use and climate-control system(s) whereby heaters and air conditioners are not so common as at De Montfort and University of York, which have a colder climate. This was also revealed in the study by Klein-Banai, who inferred that "scope 1 and 2 emissions are primarily influenced by the physical size of the institution and secondarily by climate" (Klein-Banai et al., 2013). EUR also depicted smaller scope-1 and scope-2 emissions, 0.12% and 7% (electricity emissions), respectively. This is because heat and electricity are produced in an environmentally-friendly way at EUR.

Figure 16. Emissions distribution by scope



Source: Authors' compilation

A desktop CF study was also recently commissioned by the university for the entire Laucala Campus (Lloyd, 2016 [unpublished]). The study, however, did not look into all the scopes and therefore was inconclusive for a complete CF assessment. Comparison, however, can be made for the categories that are similar to this study. The Lower Campus emission contributes about 20% of the overall emissions. Since the CF for the whole of Laucala Campus included similar scope-1 and scope-2 emissions categories, but only business air travel for scope-3 emissions, the student and staff commute, paper consumption, and MSW emission categories were omitted for this comparison. CF results for the entire Laucala Campus was estimated to be 0.5 tCO_2e per student (FTES), the lower campus contributing 0.1 tCO_2e per student (FTES), (not including student/staff commute, paper consumption, and MSW). Also, emissions from energy consumption depicted the highest emissions (excluding student/staff commute). This is particularly important since trends in electricity consumption show a rapid increase.

Uncertainties

The figures in this report should be viewed as a best estimate rather than an exact measure due to uncertainties. This is inevitable and may arise in the data-collection process, resulting from infrequent reporting across the departments, data gaps, lack of standards, and human error. The emission factors determined by the IPCC take national scenarios into account wherever possible and present uncertainty calculations (Bastianoni et al., 2004). Emissions for scope 1 were calculated for fuel consumption using the IPCC 2006. For scope-2 emissions, from purchased electricity since the emission factor is country-specific and with high confidence in the quality of activity data, the results is likely to be accurate to within 2%. There is low confidence for scope-3 emissions, since assumptions had to be made for some of the categories. For instance, for the staff and student commuting, assumptions based on the travel distance relative to the vehicle type were made. The average global fuel economy of 8L/100km (UNEP, 2016) was used to convert distances traveled for the motorized vehicle to fuel consumed. The IPCC 2006 was then used to estimate the CO_2e emissions. Hence the uncertainty in the results is likely to be 10%. For business air travel there were gaps in data and thus there might be some trips not accounted for. Default emission factors published by the Environment Protection Agency were used and thus the accuracy of the results are within the range of 5%. For paper consumption, default emission factor was used; the level of uncertainty was within 5%. In totality, the estimated emissions are considered to be accurate to within 22%.

Mitigation Strategies

Renewable energy–based electricity generation—USP/KOICA 45kWp GCPV system

The Lower Campus has a 45kWp Grid Connected PV (GCPV) system, which was established in 2012. This is connected to one of the main load-distribution boards so that the PV power produced is first consumed for energy use at the campus and the excess is exported to the Energy Fiji Limited (EFL) grid. On average, the PV system yields about 48.7 MWh of electricity per annum (Sunny Portal, 2016). This constitutes about 25% of the total electricity consumed at the Lower Campus.

Motorized vehicle GHG emissions and % contribution

Table 5. Total electricity consumption for the lower campus in 2015

EFL Grid electricity used	PV system production	Total electricity consumption (2015)
145.8 MWh	48.7MWh	194.47 MWh

Source: Authors' compilation

The electricity provided by the grid is generated by the FEA. The producers utilize a mix of both renewable and non-renewable resources to generate electricity. The average power generation mix for 2013 was 60% hydro, 37% diesel and heavy fuel oil, 1% wind, with the remaining 2% provided by the Independent Power Producers, namely Tropik Wood Industries Limited, and Fiji Sugar Corporation (FEA, 2016).

Considering this generation mix, 54 MWh of energy consumed by the USP Lower Campus per year is non-renewable. Establishing a 50kWp PV rooftop system for the campus can offer the campus a 100% reliance on renewable sources for its energy needs and a net annual GHG reduction of 12.9 tCO_2. The CF calculated for electricity consumption for the base year is 74 tCO_2. Although the initial investment costs would be high, the system will offer a 17.4% reduction in emissions from electricity consumption for the campus and will do away with that expense from electricity bills. The cost analysis and emission reduction analysis are summarized below in Tables 6 and 7, respectively.

Table 6. Cost analysis

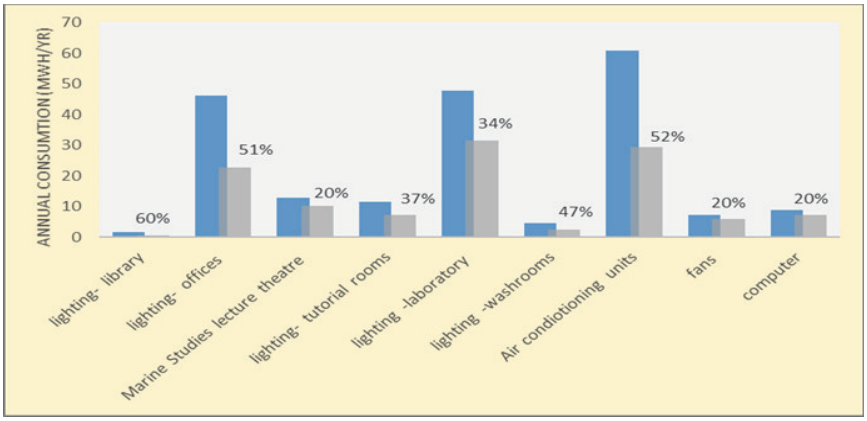
Measure	**Install 50kWp photovoltaics**
Annual emissions savings	12.9 tCO_2
Annual financial cost saving	FJD $26,866
Initial costs	FJD $150,000
Pay back	5.8 years

Source: Authors' compilation

Energy Audit and Energy Efficiency Measures

Before establishing any new renewable energy (RE) based generation system, energy efficiency measures are a must. The energy use at Lower Campus can be greatly minimized by the implementation of the proposed cases for the facility.

Figure 17. Post-measures reduction opportunity breakdown



Source: Authors' compilation

Table 7. Emission reduction analysis

Base case system GHG summary (baseline)									
Fuel type	Fuel mix (%)	CO_2 EF (Kg/GJ)	CH_4 EF (Kg/GJ)	N_2O EF (Kg/GJ)	Fuel consumption (MWh)	Elect. Gen Efficiency	T&D losses	GHG EF (tCO_2/MWh)	GHG emission (tCO_2)
Diesel	40	36	0.0019	0.0019	65	24.8%	10%	0.5095	13.4
Proposed case system (GHG summary)									
Solar	100	0	0	0	65	0	4%	0.310	0.5
GHG emission reduction summary									
Power Project		Base case GHG emission		Proposed case GHG emission (tCO_2)		Gross annual GHG emission reduction (tCO_2)		Net annual GHG emission reduction (tCO_2)	
		13.4		0.5		12.9		12.9	

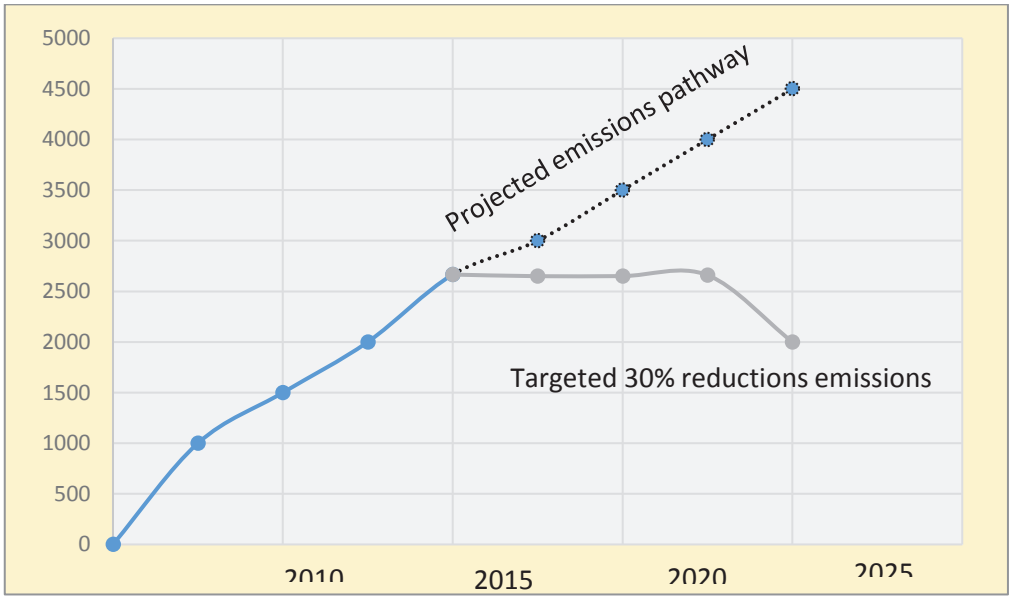
Source: Authors' compilation

About 23.9 MWh of energy can be saved. This is approximately 13% of the total amount of energy that was consumed at the campus for the base year. This also offers

an opportunity for an emissions reduction of 12.2 tCO2. The proposed cases for the main building spaces include using energy efficient luminaires for lighting, end-of-life replacement of AC units and use of LED monitors for computer equipment. Energy-use reduction potential of these measures is depicted in Figure 17 (above).

This part of the study involved proposing mitigation strategies and "internal reductions," which is part of the mitigation action plan—for example, opting for energy efficient lighting. WRI suggests that organizations should give priority to internal reductions and consider offsets options as a supplementary effort in order to achieve reduction goals. The mitigation goal for the campus can be to reduce 30% of its emissions by 2019 (Figure 18, and Table 8).

Figure 18. Suggested mitigation pathway for the campus.



Source: Authors' compilation

Conclusion

The CF for the Lower Campus was estimated to be 2665.8 tCO2e. The purpose of this study is to act as a baseline, monitor trends, and measure future progress. Emissions from transport held the largest share of emissions for the Lower Campus, which comprised mainly staff and student commuting. The total CF for the Lower Campus was estimated to be about 1.1 tCO2e per student (EFTS) and 0.07 tCO2e per square meter. This value is quite low as compared with other universities around the world.

However, energy consumption is relatively high considering the energy demand with the growing population of the university; thus, among the carbon emission–reduction

strategies, there is a suggestion to install an additional 50 kWp PV rooftop system, which will make the Lower Campus 100% renewable in terms of electricity consumption. Other internal reduction strategies are recommended that involve following simple energy-efficiency practices by the staff and students to make a difference and contribute to the campus greening efforts of the university. Hence, this CF analysis not only gives a tangible number, so as to see the campus's standing relative to other university campuses' carbon performance, but it also provides a platform on which future mitigation targets can be set and monitored.

Future Work and Recommendations

This CF study has potential to be implemented in entities with larger organizational and operational boundaries. Business organizations, government ministries, non-governmental organizations, and municipalities can have CF analysis carried out to account for their emissions, to help plan their mitigation strategies. Since the GHG Protocol guide also includes sector-specific guidance, CF study of various industries can also be conducted. The Marine Campus CF analysis is a small dot relative to the many more dots that need to be connected to make progress towards the long-term mitigation goal under the Paris Agreement, which is to reach net-zero GHG emissions by the second half of the century.

With the regional and domestic focus in mind, this CF report can be used by campus stakeholders to revisit and refine strategies in achieving campus greening and sustainability efforts. Using this report, an emissions-reduction plan can also be devised and the effectiveness of the strategies and the progress towards achieving these goals can be measured and tracked. This report can also be used to educate students, faculty, and staff about campus CF and encourage participation in sustainability efforts of the campus. This report can also set a trend in the community for the other educational institutions and business organizations to follow and establish their own carbon-reduction plans, which will not only benefit the environment but also contribute to Fiji's target of achieving 30% reduction in CO2 emissions. This GHG- emissions inventory lays a foundation for documenting an institution's emission sources that is quick and inexpensive.

Table 8: Emissions and cost analysis of proposed energy efficient measures

Facility characteristics—lighting	**Measure**	**Annual energy consumption saving (MWh)**	**Annual emissions saving (tCO_2)**	**Annual energy cost saving (FJD)**	**Total initial cost (FJD)**	**Payback period (yrs.)**
Marine Studies library	De-lamp and ballast upgrade	0.5	0.26	195	150	0.8
Marine Campus offices	De-lamp and ballast upgrade	6.5	3.31	2535	6350	2.5
Tutorial rooms	Luminaire upgrade	2.3	1.17	897	1775	2.0
Laboratories	De-lamp and ballast upgrade	1.2	0.61	468	2575	5.5
Washrooms	De-lamp and ballast upgrade	0.9	0.46	351	425	1.2
Facility characteristics: Air-conditioning units	End-of-life replacement for AC units	10.1	5.16	3946.8	20000	5.1
Facility characteristics: Circulation fans	Upgrade to energy-efficient fans	0.6	0.31	234	3,125	13.4
Facility characteristics: Computer equipment	Replace CRT monitors with LED monitors	1.78	0.91	694.2	6498	9.4

Source: Authors' compilation

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An Impact Case Study of Improved Road Infrastructure on Urban Communities in Samoa

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Abstract

This study explores the social-economic impacts of the upgraded Vaitele Street on a selected number of households residing along a two-hundred-meter stretch of the Vaitele Street. Studies conducted elsewhere in the developed and developing world, report a significant positive impact of infrastructure on economic growth, income and productivity. Massive donor funded infrastructure investment particularly in major road and drainage construction have been implemented in Samoa for the last fifteen years to support development efforts to achieve the Millennium Development Goals, now replaced by Sustainable Development Goals. However, there has been a dearth of impact studies both at the national and local levels to gauge how road upgrades among other infrastructure developments are impacting the lives of the general population. This study intends to fill this knowledge gap, by documenting the social –economic experiences of twelve households with road frontage properties and how they are making the most of the opportunities presented by the upgraded Vaitele Street.

Keywords: income; infrastructure; knowledge gap; Samoa; social-economic impacts

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Introduction

The paper explores the social-economic impacts of improved road infrastructure on one particular urban community in Samoa. Infrastructure is an important sector driving development in Samoa and it is understood to include physical structures to enable the production of goods and services. Gramlich (1994) defines infrastructure as long lasting capital intensive systems and facilities such as roads, highways, bridges, communications, water and sewer lines. Massive investment in road upgrade across the country commenced half way through the Millenium Development Goals period in 2006 in preparation for the 2007 South Pacific Games hosted by Samoa. These road upgrade works continue today under the Sustainable Development Goals flagship, particularly Goal 9, building resilient infrastructure that promotes inclusive and sustainable industrialization. Challenges and opportunities to infrastructure development in the Pacific Islands have been well documented in the literature (see ADB, 2009; AusAID, 2013; ESCAP, 2015, 2017; World Bank, 2006), however, there is a scarcity of studies on the impact of infrastructure, such as road networks, on the social-economic well-being of road users, particularly in Samoa. The study addresses this significant knowledge gap, by looking at the impacts of the newly upgraded Vaitele Street on a selected number of households residing along one section of the upgraded street (see Figures 1 and 2) It will investigate the economic and social impact of the upgraded Vaitele Street, a major transportation route connecting the Apia Central Business District to Faleolo International Airport and the densely populated North West Upolu region. North West Upolu is most densely populated region on the main island of Upolu, the second largest island that make up the Samoa group of islands. The 2016 Census survey enumerated 66358 persons or 34% of the total population reside in North West Upolu. The upgraded road provides a practical tool to view and explain the socioeconomic trends as experienced and related by the study participants in their narratives. Key questions underpinning the study are related to the effects of the upgraded road on family life variables such as their health, general well-being and economic benefits derived from the road upgrade.

Infrastructure: Issues, Challenges and Conceptualizing the Study

Regional Context

Service Infrastructure is a generic term used to encompass physical structures used by industries in the production of goods and services such as schools, hospitals, and network utilities such as energy, transport, water and information communication technology. Infrastructure development are critical in the initial stages of development affecting aggregate output from the islands. Additionally, since

independence, Pacific Island countries have demonstrated extensive social-economic progress despite numerous challenges posed by their small size, isolation and increasing vulnerability to natural disasters. Smallness, isolation and vulnerability to natural disasters suggest a need for sustainable infrastructure a perpetual challenge for the region. Fortunately for the region, the Asian Development Bank among other donors are stepping up efforts to promote sustainable infrastructure development through a number of loans, investments and technical assistance through public-private partnerships.

Maintenance of infrastructure is critical if they are to be used for long periods of time. Also, many of these structures built since independence have deteriorated due to neglect and poor maintenance. Lack of funding, poor planning, shifting priorities, and competing expenditures between social infrastructure such as schools and health as opposed to economic infrastructure like water and transport demonstrate some of the problems linked to infrastructure maintenance. A 'build-neglect-rebuild paradigm' describes the attitude of Pacific Island governments towards infrastructure development (ESCAP, 2015). Samoa is currently undergoing major road upgrading projects in preparation for the 2019 Pacific Games. Similar road upgrades were carried out in 2006 before the 2007 Pacific games and in 2014 for the Small Island Developing States (SIDS) meeting.

Growing Pacific economies demand new transport and utilities infrastructure to move people, products and connect the urban centers to their hinterlands. Increasing populations will generate the need for schools and healthcare facilities. Fast and cheaper access to broadband networks will bridge the region's isolation from major markets in Europe, Asia and the Americas. And the increasing urbanization of many Pacific states will continue to put pressure on existing infrastructures such as water, transport networks and waste management. Poor management and poorly structured infrastructure projects have been identified as one of many constraints to growth in the region (AusAID, 2006, p. 3; Pacific Economic Monitor, 2017). Lack of capacity to deal with large and complex projects that require experience in technical, legal and financial skills exacerbates the challenges to infrastructure development particularly in the smaller islands.

Providing efficient infrastructure is critical to achieving the 2030 Sustainable Development Goals. This requires resources for investment, operation and maintenance. Transport infrastructure is unlike other key services such as health and education because large scale transport services demand higher capital intensity, carry high risk and long pay back periods but enjoy sustainable economies of scale (Calderon, Cesar, & Serven, 2004).

Infrastructure can also be quite 'lumpy' in the sense that huge pipe lines and cables

need to be laid underground in the form of networks such as broadband cables and water treatment plants with extensive water distribution systems. Once constructed, these assets need constant repair, upgrade and maintenance. By the same token, they also define where and how people liv/e and work. Infrastructure mistakes can return to haunt government and tax payers in the long term. As such, long term vision and planning is crucial. Hence, the role of the Pacific Regional Infrastructure Facility (PRIF) is to coordinate infrastructure financing and provide advice on policy, planning and regulations among other things.

Climate change poses considerable challenges to existing and future infrastructure projects intended for the region. The bulk of critical infrastructures such as water, energy, roads, and information communication technologies are concentrated in coastal areas, which makes them vulnerable to coastal erosion from rising sea level. Considerable efforts to climate proof many of these infrastructures are being trialed across fourteen Pacific Island countries (UNDP, 2015). Climate proofing projects such as beach nourishment, sea and river dike construction and port upgrade are some of the more common activities undertaken in Samoa, Vanuatu and Kiribati.

Samoa is one of the better performing Pacific Islands to meet its Millennium Development Goals targets, particularly MDGs 1,4, and 5 (UNDP, 2014). But a review of Samoa's progress towards achieving the Millennium Development Goals by the Commonwealth Foundation (2013) shows a different picture. The country remains vulnerable to global economic shocks and natural disasters such as the 2009 tsunami, 2012 Tropical Cyclone Evan and 2018 Cyclone Gita caused widespread damage to a number of key infrastructures, particularly roads, power and water supply. Samoa's integration into the fast pace of international competition for capital and resource markets may have spurred the many changes introduced in the last five years such as the road switch, time change and massive expansion in infrastructure – roads, electricity and information communication networks (Samoa Bureau of Statistics, 2011, p. 136). Having said all that, the challenge for Samoa rests in assessing how these infrastructural developments, particularly roads, are impacting on users, in this case, the urban road users.

Sustainable road development is a priority development goal to meet land transport demands for Samoa. It supports inclusive economic development and sharing the benefits of economic growth to reduce poverty. Access road projects initially were intended to encourage and promote village agriculture (Strategy for the Development of Samoa, 2008-2012). At the same time, the need to meet Samoa's obligation towards achieving the Millennium Development Goals meant that road transport infrastructure was also part of the government priority area of investment (Government of Samoa MDGs Progress Report, 2010). The most immediate

poverty-alleviating effect of investing in a road is the local employment created in its improvement and subsequent maintenance. If suitably targeted, the poor can benefit most directly through earnings. Studies elsewhere in Bangladesh and Sub-Sahara Africa show labour intensive road works to be 25 to 30 percent cheaper than comparable capital intensive methods and employ five times more labour which can be wage targeted on the poorest group (Howe & Richards, 1984; Keddeman, 1997). Similar data cannot be found anywhere in the Pacific, but anecdotal evidence suggests parallel experiences in Samoa. The sub-contraction of road construction and maintenance work to local private contractors in Samoa began in the 1990s in response to public sector reforms and restructuring of government ministries where the former Public Works Department became the Ministry of Works, Transport and Infrastructure (MWTI). The current practice in relation to road construction and maintenance is carried out by local contractors, under the watchful eye of the MWTI through its monitoring and evaluation section.

Benefits to road users such as farmers, school children, public servants, village communities for example, need to be quantified to determine whether people are better off as stipulated in the planning and implementation stages of road construction and rehabilitation. There is a scarcity of impact studies of this nature in Samoa. Hence, this study intends to provide some primary data of benefits accruing to selected urban dwellers residing along part of Vaitele Street. Vaitele Street is a section of the main west road connecting Apia Central Business District to the Faleolo International Airport and the Mulifanua Wharf.

Concepts

Transport geography has received renewed interest among geographers since the 1990s in response to the rapid and increased globalization of trade, international division of labour and multinational corporation activities that demand the movement of goods and services, resources and people between different locations (Rodrique, Comtois, & Slack, 2009). Transport infrastructures such as roads, terminals, equipment and networks take up a critical chunk of space which is the basis of a complex spatial system (De Blij, 2007, p. 409). Given that geography seeks to explain spatial relationships, transport infrastructures and networks are therefore important because they facilitate and have impact on these interactions.

Accessibility is an important concept of transport geography that is useful to frame this study. Hansen (1959) defines accessibility as the potential of opportunities for interaction, particularly in relation to the ease with which any land-use activity can be reached from a location using a particular transport system (Geurs & Van Wee, 2004). Accessibility determines the locational advantage of an area (a town, region,

corridor) relative to all areas including itself. In this study, the road upgrade from a two-lane to a four-lane, including paved walk ways and foot paths for pedestrians has impacted strongly on small family owned businesses situated along the Vaitele Street corridor. Evidence from the study indicated improved earnings accruing to small family owned businesses located along the upgraded Vaitele Street, that correlates with improved accessibility to customers both vehicular and foot traffic.

Equally important is the concept of connectivity defined as the degree of interconnection between roadways (Brinckerhoff, 2009, p. 16). Vaitele Street is a 23 kilometer road stretch connecting Apia with the Faleolo International Airport and the Mulifanua Wharf. Perpendicular to Vaitele Street in the study area (see Figure 1) are a couple of roads (Vaimea Road and Moamoa Road) and Fugalei Street. These roads combined with Vaitele Street serve the purpose of improving the efficiency of movement using the roadway system as explored in this study and similar studies (see Taua'a, 2015). Mobility (ease of movement) and accessibility are important aspects of efficiency. Furthermore, connectivity extends beyond improved mobility and accessibility to include better pedestrian connections and shorter, more direct routes and less congestion (Brinckerhoff, 2009). These are obvious benefits of connectivity to consider in future road upgrade projects elsewhere in the country. But for this work, it is sufficient to say that the Vaitele Street upgrade has enhanced the connectivity of the study households to the greater Apia urban area. The Vaimoso household that operates a road stall (see Figure 1 and Table 2) is strategically located at the intersection of Fugalei Street and Vaimea Road (see Figure 1). One can assume the clear benefit of enhanced connectivity between this household and its suppliers from rural areas.

Methods and Location of Research

A range of research instruments (questionnaires, focus groups, household visits, observations, face to face interviews, talanoa) were utilized to collect the information needed to answer the study questions.

Questionnaires were designed to collect the respondent's personal and household profiles such as age, gender, occupational status and how long they have been living in the area. Other information about the actual and perceived impacts of the improved road were contained in the second section of the questionnaire. Questions asked in this section include changes in life style and habits, benefits derived from the upgraded road, and hazards related to the widening of the road. Prior to implementing the actual study, the processes in relation to submission of study proposal and ethical approval had to be obtained from the sponsoring institution.

A focus group session was conducted to stimulate debate and generate a forum for respondents to interact to remind and or validate information that would have been overlooked by the researcher in the data collection and verification process. The focus group members comprised five respondents; a taxi operator, BBQ vendor, sewing shop owner, a road stall vendor and a furniture maker (see Table 2). They were selected to ensure a fair representation of the formal and non-formal economic activities explored in the study. Additional face-to-face interviews with ten of the respondents were conducted to clarify some of the responses in the questionnaire. The idea was to interview all the seventeen participants, but given time constraints and the difficulties of organizing interview times that do not interfere with the participants' work schedule, ten were selected for face-to-face interviews, five from each village.

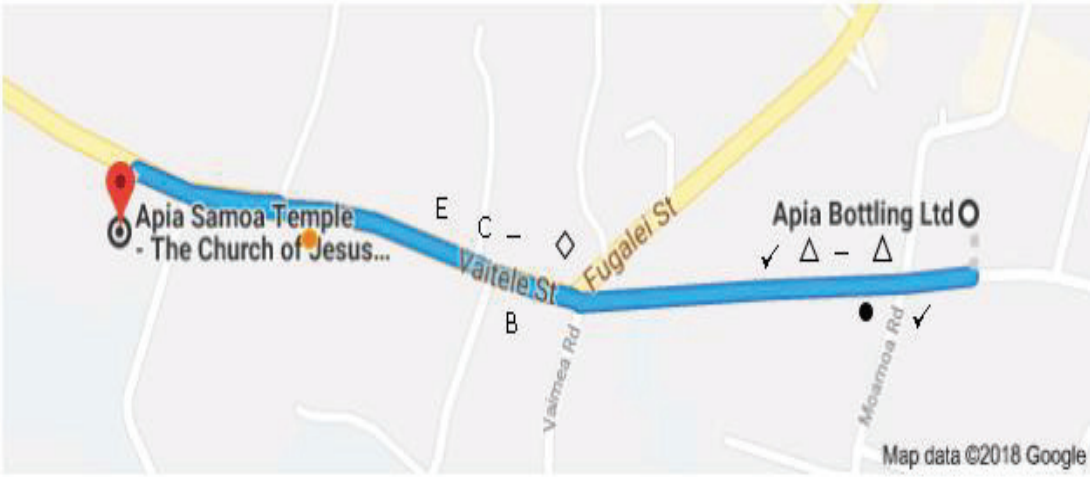
The case study tool is significant in examining the real life experiences (Yin, 2003) of a selected group such as the family unit whose livelihoods have been impacted for better or worse by state funded road improvements. An instrumental case study of one household who have been living in the study area for more than fifty years was conducted to find out how the initial road that was built before independence in 1962 has evolved into what it is today, and more importantly, how these changes have impacted on the family over the years. The instrumental case study seeks an insight into the road-widening project, and how its existence and improved state impacts on a particular group or family. It is expected that the experiences and or lessons learnt from this case can be generalized to similar studies elsewhere in the country. The case study information was collected through a structured questionnaire, face to face interviews and several informal talanoa sessions with the head of the household. The case study family was selected based on the fact that it was one of the first families to settle in the area before Samoa became independent in 1962 and has been there for more than fifty years. Other families followed after Independence along with many other new comers to the area, but occupying inland areas.

Talanoa (conversing) in the Samoan language was the medium of communication, given the respondents are Samoans and conversing in the vernacular allows for the free flow of information between researcher and participants (Vaioleti, 2006, p. 21). Talanoa was used in explaining the questionnaires to the respondents. In the same vein, talanoa, as a constructivist paradigm allows both the researcher and participant to contribute to the discussion, where both can learn from the experience (Prescott, 2008, p. 131).

Sorting and interpreting the data and information to answer the study questions was an important element of the study. Coding commenced after the questionnaires were completed and sorted. Coding closed questions were dealt with first, as they were

simple and direct. Open questions demanded more attention in terms of reading, familiarizing and translating the responses before they were grouped into meaningful themes. The focus group data were analyzed based on a selection of qualitative data analysis tools set out by Leech and Onwuegbuzie (2007). These were discourse analysis and key words in context. Discourse analysis probed the words and phrases as spoken by the respondents to determine how they relate to and describe their experiences and events in their daily lives that shape their lived experiences in and around the study area (Leech & Onwuegbuzie, 2007). Key words in context showed how respondents used words in context by comparing words that appear before and after 'key words'. A variant of this tool as applied in this study was identifying key words from the verbal responses of the participants to the questions being asked in the focus group session. Key words in the context of this study were identified from a word count of the most commonly used or spoken word(s) by the respondents in the focus group. For example, the word '*tupe maua'* translated as 'money received' was spoken nineteen times in the informal talanoa session during the focus group discussion. The key word 'tupe maua or money received' was spoken or used in the context of *ala manuia* or livelihood and *lumana'i'o le aiga* and translated as 'the future wellbeing of the family'.

Figure 1. Study Area: Map of part of Vaitele Street.



Key: ✓Sewing shops; • Case Study; E for Elei Printing; C for Charcoal Making; – Taxi Stand; B for BBQ; ◊ Road Stall; •△Shop; furniture shop.
Source: Google Maps 2018

Figure 1 above shows the part of Vaitele Street where the study households are located and the type of economic activities they are engaged in. The section of Vaitele Street covered in this study was one of the first to undergo road improvement in 2006 before the 2007 South Pacific Games hosted by Samoa. This survey was conducted in October 2014. Figure 2 shows Vaitele Street in relation to other places

surrounding the study area to enable a complete view of the context in which the study area is situated. The study population of twelve households and seventeen household members were selected from people whose lands front on to the main road in the urban villages of Taufusi and Vaimoso. As such, there is a diverse mix of land use, that range from formal businesses (super markets, hardware stores, furniture shops), informal businesses (road side stalls selling cooked food, charcoal, wood), as well as residential areas. Many of the prime lands that front on to Vaitele Street are a mixture of freehold, church, government and customary lands. The study is limited to households and how they have been affected by the road upgrade, hence the sample of twelve households and seventeen people.

Results

Sociodemographic profiles of respondents

The study was conducted over a period of five weeks in October 2014. There were two ways engaged to select the respondents. First, the households were identified from the list of parishioners in the Taufusi and Vaimoso Catholic Parishes. A foot survey of the area was then conducted to appraise the study area and to confirm the names, location and economic activities of the selected households. This required walking the length of Vaitele Street that was included in the study area (from Apia Bottling Taufusi to the bridge (Vaimoso) before the Samoa Temple, see Figure 1). This exercise required physically counting the number of residential households in the study area as opposed to other forms of land use, such as churches, schools, and commercial operations (hardware & electrical goods wholesalers, car rental operations, supermarkets, food and beverage manufacturing). The foot survey provided the opportunity to informally engage with potential respondents, who volunteered information such as their church affiliations, and land ownership that were very supportive towards the study. The foot survey covered two urban villages of Taufusi and Vaimoso marked by the Vaea and Vaitele Streets' intersection and the Latter Day Saints Temple (see Figure 2).

Table 1 presents a summary of key variables pertaining to the respondents in the study. Seventeen persons from twelve urban households residing along the Vaitele Street completed the questionnaires. Each household was requested to nominate two persons to participate in the study, and one of the participants would have to be the head of the household. In the absence of the head of the household, another senior member of the household was requested to participate. There is a slight majority of males (53%) over females (47%) in the study sample. The distribution of population by sex and place of residence in the 2016 Census, shows similar trends, with a total of 18,740 males and 18,612 females residing in the Apia Urban Area (Samoa Bureau

of Statistics, 2017, p. 13).

Figure 2: Vaitele Street Street in Relation to Vaea Street and Part of Apia

Source: Ministry of Natural Resources and Environment, Map Division.

The extended family is the dominant family type (89%), an expected trend among many urban households that play host to members of the larger extended family from the village. The extended family consists of first or second generations of cousins, nieces, nephews and in-laws from the village, who work and attend school in Apia. In one particular household, a distant relative was living with the family to serve out his banishment from their village in Savaii. The host family found him very useful in operating their BBQ food stall (Table 2).

The question on employment status yielded some interesting responses. Eighteen percent, were at school, thus, they worked to help out in the household business during weekends and school holidays. Those who responded as self-employed (41%) described the owners of the family business, whereas those who were permanently employed (41%) were other members of the household who worked or helped out in

the family business (see Table 2). Three respondents who were permanently employed at the time disclosed in our informal talanoa session, that they occasionally received their wages in cash, otherwise, it was mostly in kind. Payment in kind was usually in the form of grocery shopping for the family in the village over the weekend, or on special occasions (Children's White Sunday), or contribution to the village or church obligation (*fa'alavelave*). This practice is not unusual among Samoan households that tend to 'informally' employ family members.

Table 1: Demographics of respondents in the study

Variables	**No.**	**Percentage**
Gender:		
Male	9	53
Female	8	47
Age Group:		
18-25	4	24
26-40	4	24
41-60	7	41
60+	2	11
Family Type:		
Nuclear	2	11
Extended	15	89
Years of living in the area:		
1-15	2	11
16-40	10	59
41 +	5	30
Employment Status:		
Permanent	7	41
Self-employed	7	41
Temporary	3	18

Source: Questionnaire Survey

Economic impacts

A major objective of the study was to examine the economic impact of the Vaitele Street upgrade on the people living alongside the street. Table 2 displays five study variables. First, the study households were numbered from 1 to 12, second, the urban villages of Taufusi and Vaimoso where the households are located. Third was the number of respondents from each of the twelve households. Fourth were the types of economic activities they operated and finally, was the frequency in which the road is used for access to and from these economic activities in the study area. Economic activities ranged from small formal enterprises (66%) to informal operations (34%). Direct access to the main road was the common variable to all the economic activities

of the households. The households selected for this study already had road frontage advantages, considering the majority (59%) have been living in the area for more than twenty years. Some (30%) have lived in the area for over forty years, while one family have lived there for more than fifty years. They are considered the 'old' families of the area (Table 1). Essentially, road access is already an established element. Road widening and resealing works have significantly enhanced the accessibility of the family businesses to vehicular and pedestrian customers alike. By the same token, the advantage of a road frontage location, enhances access to other services and products required for the small family businesses to grow.

Table 2. Type of Economic Activity

Household Number	Urban village	Number of Participants Per H/hold	Type of Activity	Frequency of road usage-access
1	Taufusi (FG)	1	Taxi Stand	Daily
2	Taufusi	2	Small Shop (grocery)	Daily, except Sundays
3	Vaimoso (FG)	1	Road stall (vegetables, brooms, printed Lavalavas, coconuts)	Daily
4	Taufusi (FG)	1	Furniture Shop	Daily
5	Taufusi	2	Furniture & Tire Shop	Daily
6	Vaimoso	2	Shop (grocery)	Daily
7	Vaimoso (FG)	2	BBQ stall	3 days per week
8	Taufusi	1	Sewing shop (home)	Daily
9	Vaimoso	1	Taxi stand	Daily
10	Vaimoso	1	Elei fabric printing	Daily
11	Taufusi (FG)	2	Sewing shop	Daily
12	Vaimoso	1	Charcoal Making& firewood	Daily

Source: Focus Group (FG); Questionnaire Survey

For every economic activity, a certain number of customers and sufficient traffic movement is a necessity to allow maximum income for the household. In the case of Household Number 2 (Table 2), their economic activity is a small shop that was

opened in 2004, with a stock value of $28,000. The owner was very excited to report how they started with humble beginnings, unsure of whether the venture would succeed, but, in less than ten years, he has extended his business and paid off the loan for the shop. According to the shop owner, there were many contributing factors to the profitability of his venture, and a significant part of the success was attributed to the upgraded road. When he started his business, the road, was a narrow one-lane stretch, with no parking space and patchy footpaths, but after the first phase of road improvement in 2006, he observed a marked improvement in the number of vehicular customers that stop at his shop. The increase in his customer base correlates with increased cash sales particularly on the weekends. Before the road upgrade, the shop sales on Thursdays and Fridays amounted to $500.00 and $700.00 respectively, but since after the road improvement, sales increased to $900.00 and $1,500 on these particular days. Improved parking space is another critical factor that allowed for easy access particularly with vehicle travelling customers.

Roadside operations were new small scale informal ventures set up after the road upgrade in 2006. According to the charcoal makers and firewood vendors the opportunity to maximize their income by eliminating the costs of transporting their charcoal to the Fugalei market unfolded as the newly upgraded road began to take shape. The family observed that the travelling public would stop and buy these items if they were provided based on the assumptions and observations they have made over the years since they occupied the area (30 years). Furthermore, from their observations, the travelling public tend to avoid going into the congested Fugalei fresh produce market if they could buy the same produce elsewhere. Hence, the idea was conceived to utilize their property's road frontage advantage. Between the period of the road upgrade and this survey, the household business has expanded on the range of products sold from their road side stall. Other informal operations sprouted along the same section of the road. The opportunity to earn a good income was too great to pass up. A cluster of economic activities that interact and complement each other is an idea that emerged to take full advantage of the newly upgraded four-lane Vaitele Street.

Similarly, other small ventures that existed before the road upgrade in 2006 (Table 2, Household 1,4,5,8,9) reported some major improvements in line with the increased volume of traffic flow and potential customer base the upgraded road would generate. The second hand tire shop (Household 5) operator reported investing in expanding parking and workshop floor space in anticipation of the demand for tire services given the projected increase in the number of vehicles as a result of the road change in 2009. The upgraded road (2006) and the road change (2009) stimulated an increase in the number of taxi service operations in the study area (and elsewhere in the country). The two taxi operations included in this study existed before the road

upgrade, another four (not included in the study) emerged in response to the road change and the affordability of second hand vehicles imported from Japan. In this particular case, the road switch other than the road upgrade was a critical factor in the household's decision to set up a taxi operation.

An enquiry into the households' cash earnings from their business activities was a sensitive but important question that had to be asked of the respondents. Hence, this was the significance of having the head of household or other senior members of the household as a participant in the study. Table 3 summarizes household income from six households who consented to disclose the status of their income before and after the road upgrade.

Table 3. Income earned before and after the road upgrade.

Household	Type of activity	Income before the road upgrade	Income after the road upgrade
1	Taxi Stand	$200-$280 weekly (fluctuates), or $900-$1000 per month.	$700 weekly (more or less), $2800 per month from 2 taxis.
2	Small shop	$500-$700 (2 days of the week)	$900-$1500 (2 days only)
5	Furniture & Tire shop	$1500-$2000 (furniture sales per week); $300+ per day from tire shop	More of the same income from the furniture shop. Tire shop collects between $600-$700 per day.
6	Shop	$600-$800 sales on daily basis, except Fridays and Saturdays with recorded sales of $1300 - $2000.	$1300 - $2000 daily, except Fridays & Saturdays ($3000-$5000)
10	Elei fabric printing	Weekly income between ($400-$600), some weeks are better than other weeks.	Income recorded at $1,500 to $2,800 per week.
11	Sewing shop	Weekly income of around $800 - $1000.	Weekly income increased to $1,500 to $2,000.

Source: Face to face interviews; questionnaires.

Economic As indicated in Table 3, there are marked contrasts in income earned before and after the road upgrade. The head of households tasked with the exercise of income calculation and disclosure were specifically asked to work from the period

before April 2007 (phase 1 of the road upgrade) and 12 months after the road upgrade[3]. There are other factors that may have a bearing on the level of income earned. For example, the taxi operation by Household 1, recorded a reasonable improvement in the earnings from the taxi operation. He also managed to buy another taxi with the savings from the first taxi. During the time of the study he had two taxis in operation. However, he also emphasized that there are times when the taxis do not earn as much as expected, primarily due to the increase in the number of taxi businesses along this stretch of Vaitele Street as a result of the road upgrade and road switch. His sentiments were reiterated by another taxi operator from Household 9 (Table 2).

The time of day in which the economic activity takes place is another factor that impacts on household earnings. The elei fabric printing business (Household 10), started off as an informal home based enterprise but is now a fully registered business entity. Operating a formal business from home has many advantages, such as flexible hours of operation, where her customers have the advantage of collecting their fabric any time after working hours when traffic is lighter. According to the owner's assessment of her earnings, flexible working hours and the road upgrade that allowed adequate public parking spaces for her customers is an added advantage to her operation.

Four households in the study (see Table 2: Households 3,7,8,12) are new informal ventures that commenced operations after the first phase of the road upgrade in 2006. The operators are rural migrants living with family in the area (see Table 1 category on Family type). The informal ventures were intended to utilize the opportunity to earn a living while awaiting formal employment in Apia. In this respect, the road upgrade produced an opportunity to earn income for some of the study respondents. The idea of spillover effects of road improvement describes the spike of informal road side stalls along 23 kilometers of the entire Vaitele Street.

Social Implications of Road Improvement

The study sample, described mixed experiences with the improved road. While the new 4-laned street inspired positive economic behavior as demonstrated in the expansion of existing small business ventures and emerging informal economic activities, other undesirable impacts were also reported. For example, a 19-year-old female, commented on how their house has become so exposed to the road, she can hear the conversations of pedestrians on the foot path. Others felt vulnerable to the prying eyes of their customers. Increased noise pollution and traffic congestion became a daily experience for residents in the area. The spike in the number of vehicles as a result of the 2009 road switch aggravated the problem. In 2011, 40 percent of 26,205 households surveyed owned a motor vehicle (Samoa Bureau of

Statistics, 2011, p.89). Data from the 2016 Census survey, reported 44 percent of 28,862 households own a motor vehicle (Samoa Bureau of Statistics, 2017, p.10). The lack of privacy from the prying eyes of other road users particularly foot traffic along the walkways and footpaths is a disturbing factor that the residents somehow have managed to adapt to. A negative spillover effect of the lack of privacy and increased noise pollution, is the infrequent and sometimes complete cessation of family evening prayers. The oldest respondent in the study, attributed escalating crime, violence and youth unemployment particularly in Apia area, to the erosion of family time in the evenings, as a result of the major disruptions caused by the upgraded road. It is important to point out that the problems identified by some of the respondents in the study are emerging elsewhere in places outside Apia and in rural areas as improved road, transport and communication infrastructure enhance access and connectivity between Apia and its hinterland. Similar experiences and problems of road accidents due to driving while under the influence of alcohol, under age driving, speeding, using cell phones while driving as reported in the media almost on a daily basis are associated with improved roads and other forms of development that Samoa has undertaken in the last twenty years.

Connecting people to their jobs and students to school plus significantly reduced travel time between Apia and its hinterlands are obvious benefits of improved roads. The study area was one of the first areas targeted by the government of Samoa infrastructure developments because of the high potential for economic development and its strategic location in connecting Apia Central Business District with the international airport and Mulifanua Wharf on the west coast of Upolu Island.

The taking of land for road widening had a significant impact on the residents whose lands were affected. Seventy-five percent of the households (9 out of 12) in the study survey had portions of their lands taken up by the project. Some households (33%), received compensation, others are still fighting for compensation. According to the Ministry of Natural Resources and Environment which is responsible for surveying and maintaining land records, many of the families owning freehold property adjacent to the government main roads, are illegally encroaching and extending their developments such as concrete fences, hibiscus hedges and flower gardens onto ‘government reserve’ lands for development purposes such as road extensions and upgrade. It was not possible to engage the households concerned in a detailed talanoa about the issue of land and compensation, considering it is a private matter and families involved do not wish to disclose any information other than the fact that some families are still waiting for compensation.

Recent (June-July 2018) boy racing activities and V8 car shows by young and not so young men may be attributed to the improved conditions of the roads particularly the

4-laned Vaitele Street that is ideal for car racing particularly in the early hours of Saturday morning. A handful of accidents in the last three years have been responsible for damages to the traffic lights at the intersection of Vaea Street and Vaitele Street in Taufusi (see Figure 2). This is a growing problem with improved roads, increased number of cars on the road and growing number of young and inexperienced drivers. The Land and Transport Authority (LTA) and Police conduct weekly road blocks on the weekends to deter inebriate drivers from driving, but it takes more than road blocks and road safety awareness programmes to address many of the undesirable aspects of improved roads as emerged from this study. For example, the lack of privacy, noise pollution from road users and infrequent family prayers in the evenings arguably are part of the broader societal changes, but at the same time a broader sense of collective social responsibility beginning with the household and older members of the group should prevail.

Insights from the Family Case Study

The case study family has been living in the area for more than fifty years, and is considered as one of the original families to settle in the area where the current road passes through was only beginning to develop. The head of the household is a grand-child of the land owner. As original occupants of the area, their story provides an oral history of the road in its early beginnings. Very few people are aware of the history of the area and the reasons for naming the street as Vaitele street, when Vaitele is a designated industrial zone that lies 3 kilometers outside of Apia urban area. Table 4 details the outcome of the case study *talanoa* session.

Table 4. Report from case study household.

Case study question	**Head of Household Response**
1. How long have you lived in the area?	My grandparents moved here from inland Vaimoso village in 1948. Their children (my father was the eldest) all grew up here. So, we have been living here even before Samoa gained independence.
2. What was the road like in those days?	I was a young boy then, but I can remember it was a narrow road, unsealed, except for ma'ama'a (crushed rocks), because, the entire area was a taufusi (swamp). But in those days there weren't that many cars and people! Hardly any accidents! Quiet,
3. How long have you been operating your shop?	The shop belonged to my grandparents. It was closed for some time before my father reopened it in 1964. I took over from him in the early 1980s and rebuilt the entire place. The old shop was very small about 150 square feet. As you can see, I have put in a second floor upstairs where we live and I have extended the ground floor for space, it is almost four times the original shop.

	The shop improvements parallel the developments to the road and the times we are living in…
4. What do you mean by your statement, that the improvements to the shop parallel the road developments?	Is it not obvious? We need to keep up with the times? The road is tar sealed and wider, so many cars and people on the road. I have a business, and I need to capture the people passing through to buy from my shop. How can I repay the capital I borrowed from the bank to extend and improve my business, if people do not stop by? I invested in a 10 vehicle capacity car park, to complement the government road upgrade. Very easy for customers to turn in and shop.
5. Any challenges, or adverse effects of the improved road?	As you can see, we live upstairs, so we are above the road level, so we have some privacy, but that does not stop the noise from below (and air pollution). Too much noise, fumes from cars! I feel sorry for some of the elderly people of our Parish. Sound proofing the house is not an option. The biggest noise hazard comes from container trucks, but that is expected with Samoa becoming very modernized. There is also the problem with speeding vehicles and booming music late at night and the early hours of the morning, especially on the weekends. There is the potential danger of a speeding car, veering off the main road and crashing into our house. I have also noticed the lack of pedestrian crossings, other than the designated crossings where schools and churches are located. So, for many people, particularly my customers living on the other side of the road, crossing to the shop, is a challenge. Another challenge, I think arising from the road upgrade, is the increased vulnerability of all this area to flooding. Compared to previous years, flooding was not as bad as today. This whole area, extending to the main Apia township is the flood plain. I think the contractors should look at properly fixing the drains… Since the road upgrade in 2007 to 2011, I have witnessed and aided the victims of twelve separate traffic accidents, two fatal ones. It is very tempting for drivers to speed. What is lacking are regular road safety awareness programmes for the public by the Police and Land Transport Authority that should go hand in hand with major road upgrades. I also notice, that the foot paths are used by pedestrians and cyclists…there should be some designated lanes for cyclists like overseas, particularly along this road (Vaitele Street), because this is the main road to Faleolo Airport.
6. What else can you recall about this area, history? The people	The land belongs to Vaimoso village, but this area was all swamp. There was no road, it was during the German administration, they reclaimed the swamp, and started road

who own these prime lands?	works to transport copra and cocoa to the Matautu wharf. Many of the families that moved close to the road are Vaimoso families, the land was sub divided among them, before it was registered as freehold, during the Germans and later under the New Zealand administration. On the eastern side, heading towards main Apia town, that was all Catholic land, leased to Catholics, some have bought land from the church, I suppose they had a vision of the future as in now, with the value of land in this area selling at $700,000 for a ¼ acre! This road was named Vaitele, because it connects Apia town to the Vaitele industrial zone set up in the 1970s, that started with the Vailima Breweries and the British American Tobacco Company.

Source: Talanoa Case study.

The upgraded road has a direct bearing on the increase in the numbers of private cars if considered together with the 2009 road switch. While there have been some positive impacts since phase 1 in 2007, as demonstrated with the spike in formal and informal economic activities as well as major improvement and extension work to pre-existing businesses, some negative effects have also occurred. Traffic congestion never seen before on Samoa's roads is becoming the norm, even outside the morning and after work peak hours. Increased availability and ownership of cheap Japanese second hand vehicles only exacerbate the problem of congestion.

While the upgraded road is designed to keep traffic and people moving, safety and protection of all road users must also feature in the planning and design of road systems. The lack of pedestrian crossings was pointed out as a critical shortfall of the improved road. The simple act of crossing the road has become a challenge for many. According to the case study respondent, crossing the road is a problem for his customers living across the road from his shop. He believes a proper crossing will not only improve pedestrian mobility, but more importantly reduce the incidence of traffic accidents. The head of household reported 12 separate traffic accidents he personally witnessed in the area since 2007 to 2011. Also, pedestrians were involved in all but one incident. The latest incident occurred in 2017, when a young man waiting to cross from in front of the shop, was run over by a speeding vehicle.

The case study respondent also touched on the increased use of non-motorized means of transport such as bicycles, very popular with young men. Footpaths are being used by pedestrians and cyclists alike. The absence of designated lanes for cyclists as in many overseas road structures is a contributing factor to many road accidents, and there has been a modest increase in reported accidents involving cyclists around the country.

Noise pollution is a constant problem reported by the case study household. Fortunately, for them, building a two-storey structure provided a small relief from the noise. But, for other families in the area, building upwards is an option, but a very costly one. Poor air quality was also a problem identified by the case study respondent, related more to the increase in the number of cars on the road as opposed to the road upgrade. Vulnerability to flooding during the wet season was another problem identified, particularly considering the entire study area is a low lying flood plain for the Loimata to Apaula stream. Food risk, noise pollution and poor air quality are not a conducive environment, particularly for the young and elderly residents in the area.

For a business-oriented household, the opportunity to expand and grow its business was stimulated by the road upgrade project. The owner expanded his shop floor space and put in a second floor as a living area for the family. In addition, he invested in a 10 vehicles capacity car park to complement the government road upgrade. To attract customers and tap into the potential benefits derived from the upgraded road, he needed to play his part in bridging the gap between the government initiative and what citizens (business community) can do to help themselves to ensure a win-win situation.

The case study household is important for three reasons. First, it represented probable scenarios further along the 23 kilometers stretch of Vaitele Street that is not included in the study. Vaitele Street runs through the Vaitele industrial zone and many other villages on North West Upolu where similar businesses to the case study are emerging to make use of the improved road. Second, it suggests what families can do to help them cope with the stresses of living along a busy road. However, factors such as access to funds, willingness to mortgage the land and the ability to make loan repayments prevented some of the study respondents from doing so. Third, the case study documents the histories of land ownership and land transfer that are useful when conducting future road impact assessment studies, particularly issues related to land acquisition for public developments.

Generalized Impacts of Road Improvement

Infrastructure in this case, major road upgrade in Apia township, is critical to growth and development prospects for the country. A multiplicity of studies including this household-based investigation, provides anecdotal and scientific evidence that better quality roads enhance the productivity and social capital of communities. Improved roads provide better access to services or markets in the case of farmers and informal sector operators. Equally important, roads are necessary to reduce differences across regions. The current government under the Human Rights Protection Party, has

always maintained its mantra of what is good for Apia is also good for the rest of the country, hence road improvement projects are a nationwide undertaking. The same applies to other services such as education, health, water, energy and information communication technology.

Highly connected road networks and high density transport infrastructure are linked to high levels of development. In countries with efficient transport systems, they provide social and economic benefits and opportunities that culminate in positive multiplier effects such as better accessibility to employment and added investments. On the other hand, poor and undeveloped roads can result in missed opportunities and lower quality of life.

Congestion is an unintended outcome of providing efficient low cost transport infrastructure to users. But, congestion is also a manifestation of a vibrant and growing economy where the capacity of the infrastructure is stretched to meet the mobility demands of users. In actual fact, congestion was one obvious effect of the improved section of road in the study area.

Upgrading roads (and other forms of transport development) was used in the past as a tool for territorial control. The German administration laid the foundations for the development of road infrastructure in Samoa to support the export of copra and cocoa. A similar approach is observed with the governing Human Rights Protection Party. Anecdotal evidence suggests that road rehabilitation projects in many of the villages tend to be implemented in the last 6 to 8 months leading up to the general elections. Donor funded road projects, among other things, are tangible evidence used by sitting members of Parliament and potential members to drive their campaigns. In the study area, this was not so evident, considering the study area is part of the Apia urban area and one of the first areas to experience major developments beginning with the early years of European contact.

Future Action

Better quality roads have profound social, economic, and health effects on communities and individuals. Samoa being a small island nation should endeavor to promote and develop good quality public transport systems such as mini-buses and taxi vans with the capacity to move large numbers of people. The use of public transport hopefully will reduce the number of private vehicles on the road. Providing bus-only lanes is a good start to promoting the use of public transport. The active promotion of non-motorized transport such as cycling accompanied by relevant infrastructure, proper policies and education-awareness programmes for users (young adults, school children) provides health benefits and improved air quality.

Children observed riding their bicycles for leisure on the footpaths in the study area and young males cycling to the shops is a good start to initiate a campaign for non-motorized transport.

Introducing a vehicle quota system to limit the number of cars imported into the country is one way of managing the demand for further road expansion considering the limited land space to build new roads or extend existing ones. This may not go down well with many people who have had a taste of the good life through the charity of families overseas and the benefits of remittances again from the expatriate Samoan community. But, with appropriate legislation and political willingness, this can be an option in the future. The four-lane road in the study area cannot be extended further unless all the free hold land owners in the area sell their lands to government and relocate elsewhere for the purpose of further road extension work, which is highly unlikely in the near future.

Advocating for better management of the population's demand for travel is just one way of curbing traffic congestion and demands for new roads. Providing options that encourage more people travelling in fewer vehicles such as carpooling and ridesharing, increasing fuel prices and imposing car-parking fees to deter private vehicle use during traffic peak hours are a handful of measures to address some of the adverse impacts of road infrastructure on small urban communities. The lack of bus stops along the study area and the prevalence of taxi operations only encourage private car usage.

Conclusion

The upgraded Vaitele Street serves the purpose of improving connectivity and accessibility as espoused in transport geography concepts. Evidence from the study demonstrated an increase in vehicular and foot traffic along the improved section of the road. This translates into improved mobility of road users and increased connectivity between urban Apia and the western part of the island, including the Faleolo International Airport and Mulifanua Wharf. The improved road facilitated better access and opened up economic opportunities for people residing within the vicinity of Vaitele Street as documented in the study.

The study explored the social-economic impacts of the upgraded Vaitele Street on twelve households living along 400 meters of the street. The households were strategically selected based on their existing economic operations, how long they have been living in the area, and the advantage of having a road frontage property.

The respondents reported earning reasonable income prior to the first phase of the

road upgrade in 2006. During the first phase of the road upgrade, income reportedly dipped due to a lot of interruptions, which was expected with detours for pedestrians and vehicles put in place before road construction works started. But after the completion of phase 1 and 2, the households reported doubling of earnings from their various small enterprises. It is important to note, that there were other factors (road switch) identified by the respondents that complemented the road upgrade which may have indirect impact on their earnings. Nonetheless, fifty percent of the households were happy and inspired by their achievements. This was reflected in the efforts of some households to expand and improve on their selected businesses to take advantage of the prospects and opportunities presented by the upgraded road infrastructure. Others were inspired to engage in informal ventures to provide a service that was deemed necessary as well as earning a livelihood at the same time. Providing employment in the informal venture was a spillover effect of the upgraded road for a couple of households in the study.

Other undesirable impacts (noise and air pollution, absence of privacy) of the upgraded road were identified, but gauging from the respondents' responses, these are only a small price to pay for the improved living standards demanded by many households in Samoa. Additionally, there are possible solutions flagged in the talanoa sessions, such as building upward or selling their prime lands and buying property out in the suburbs of Apia.

Overall, the upgraded Vaitele Street fulfills an important role in effecting access to services and markets as well as moving people and products between places particularly along the Apia to Faleolo International Airport corridor, impacting directly on the country's gross domestic production. Raising the productivity of households as demonstrated in this study is a small but significant evidence to demonstrate that properly planned and managed infrastructure investment can work to deliver opportunities and benefits to the livelihoods of communities dependent on it.

One of the important reasons for impact studies is to lend support to policy formulation. Therefore, a number of policy directions can be gauged from this study. First, there is a need for comprehensive road impact assessment that entail extensive consultation with a wide cross section of the community to understand their needs. Government agencies responsible for road planning and development need to ensure that all groups of road users from manufacturers, farmers, local government, parishioners, landowners, other service providers and motorists are consulted to ensure that road infrastructure planning and investment is well coordinated to reasonably anticipate future needs and problems.

Second, there should be some principles to guide the development and use of main road infrastructures. The focus of main road development is on safety and efficiency of the road system. Some of the main road impacts identified may require mitigation measures such as transport modal choice and traffic management. This raises an important issue related to the lack of mitigating strategies in government's approach to managing the undesirable effects of improved roads. The case study household provided an example of how they coped with the noise pollution and lack of privacy at the family unit, but there is room for the state to develop national road strategies and policies to address unfavorable impacts of road improvement.

On the other hand, a significant number of economic activities that emerged in response to the improved road are small and owner/family operated. There is no government evidence to indicate that these forms of economic developments are consistent with the main road plans as set down in the road upgrade phase that started in 2006 to 2016. Developments that are consistent with main road upgrades should not cause significant impacts to the road system. At the same time, inconsistent development activities may cause significant impacts that may compromise the safety and efficiency of the road system. This situation calls for considerable transparency in monitoring and setting conditions for such developments. These can be achieved with proper road policies in place to guide the work of the relevant authority such as the Land Transport Authority.

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The Development of Trade Arrangements in the Caribbean Island Nations and the Pacific Island Countries

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Abstract

The contemporary turn of events post-Brexit and the election of Donald Trump hints at a return of protectionism. However, for years now, the World Trade Organization (WTO) has been advocating and continues to advocate that regional arrangements and closer economic integration would benefit all countries. Arguments regarding trade integration clearly have been contentious. Nonetheless, in regards to small island countries (SICs), it is quite evident that they perform better together than alone. The route to regionalism has been a long and painful journey for both the Caribbean Basin and the Pacific Rim. Many simply dismiss the sluggish growth of the Pacific Island Countries (PICs) in comparison with the Caribbean Island Nations (CINs) by simply declaring that regionalism is working better for the latter. This study presents a detailed account of efforts at nurturing regionalism on the part of these two seemingly similar, yet distinguishable groups of islands. Through such scrutiny, this paper documents a stark contrast in the development of trade arrangements that clearly influence the growth of the regions.

Keywords: Caribbean Island Nations; Pacific Island Countries; regional conflicts; regional integration; trade arrangements

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Introduction

Trade liberalization has come about only through long and painful discussions both for the Caribbean Basin and for the Pacific Rim. An interesting observation made by several authors is that "both in the Caribbean and in Oceania, regional states have had a significant history of cooperating in an attempt to lessen the inherent and linked problems derived from their size and their islandness" (Rolfe, 2007, p. 100). From the theoretical perspective of economic integration, the smallness of an economy forces production to be of sub-optimal size, causing economic disadvantage (Armstrong et al., 1998). These authors assert that the significance of trade to smaller economies necessitates economic integration, in hopes of benefiting from access to other/larger markets.

The World Trade Organization (WTO) for years has advocated that regional arrangements and closer economic integration can benefit countries by improving scale. Simultaneously, it acknowledged that under certain circumstances regional trading arrangements could also be an obstruction as they could invite rampant trade diversions (Freund & Ornelas, 2010). Arguments regarding trade integration clearly have been contentious. However, as regards Small Island Countries (SICs), in the Third Summit of the Alliance of Small Island States it was emphasized that it makes sense for small and less developed states to group together to take advantage of the "unlimited development opportunities to be achieved when pursued in partnership and with a sense of common purpose" (Alliances of Small Island States, 1999).

Integration among small island economies has long been at the heart of discussions by developing countries facing challenges of globalization. The past two decades attest to renewed interests in integration by means of trade arrangements. In 2000, a total of 170 regional trade agreements had been notified to the WTO. This rose to 330 agreements by July 2005. As of April 7, 2015, approximate 612 notifications of regional agreements had been received by the WTO (World Trade Organization, 2015). Such regional trade agreements have become increasingly prevalent. The scope of agreements has evolved as well. For instance, initially, the emphases of trade agreements were on visible trade barriers, the likes of tariffs and quotas. However, recently these have been extended to invisible barriers such as health (sanitary) and environmental standards, government regulations, labeling requirements, and measurement standards, increasing the complexity of such arrangements. As globalization accelerates, changes in the international trade system are inevitable. The WTO in 1994, for instance, extended the General Agreement on Tariffs and Trade from traded goods exclusively to include trade in services and intellectual property rights through the General Agreement on Trade and Services (GATS).

Viner in 1950 (as cited in Piquet, 1950) investigated the welfare-enhancing effect of economic integration and coined the terms *trade creation* and *trade diversion*. Simply put, trade creation is replacing higher-cost domestic production with lower-cost imports from a partner country, whereas trade diversion is replacing lower-costing cheaper imports from the world market with higher-costing imports from a partner. Thus, Balassa (1962) infers that the magnitude of the trade creation/diversion determines whether the economic integration process is welfare-enhancing or not.

Over the years, many countries have undertaken expansive steps. Newer countries have joined one or more such agreements and dormant agreements have been reviewed and revived. The World Bank evaluates one such preeminent example: the European Union, which originally was a Customs Union (Common Market to the European Community), later changed to a Single Market with free movement to labor, capital, and services and substantial regulatory harmonization and eventually to an Economic Union with a single currency (Fernandez & Portes, 1998, p. 197). As expounded by the aforementioned authors, economic integration unfolds in three stages. First, the trade is liberalized amongst partner countries. Next is the liberalization of the movement of factors of production; followed by integrational coordination of national policies, mostly involving exchange rates. The EU is just one of the best-known examples of regional trade agreements (Snorrason, 2012). More recently, the EU has been in the process of negotiating a new free trade agreement with the United States, known as the Transatlantic Trade and Investment Partnership (TTIP) together in an economic partnership with Japan. In the likely event that the United Kingdom decides to become an independent player post-Brexit, it will definitely have much less bargaining power than it had whilst being part of the EU.

Additionally, according to the WTO (2015), here are a few of the best-known examples of regional trade agreements: The European Free Trade Association (EFTA), The North American Free Trade Agreement (NAFTA), The Southern Common Market (MERCOSUR), The Association of Southeast Asian Nations (ASEAN) Free Trade Area (AFTA), and The Common Market of Eastern and Southern Africa (COMESA). The WTO states that the above arrangements worked well for the member countries because mostly regional trade agreements supplement multilateral trading systems. However, in the wake of the 2016 US presidential election, previous arrangements on the trade forefront have been challenged. President Trump has been saliently engaged in renegotiating NAFTA; has withdrawn from the Trans Pacific Partnership; and has placed a hold on the TTIP with the EU. Hence, whilst recognizing the possibility of regional trading arrangements failing

under certain circumstances, the WTO emphasizes trade integration as complementary to development. In WTO's analysis of Globalizing Regionalism, it is indicated that economic integration can particularly help small developing countries build on their comparative advantage, sharpen the efficiency of their industries, and strengthen their political commitment to an open economy (Moore, 2000).

Narrowing the focus to small island nations the likes of those in the Pacific and Caribbean regions, one finds commonality in their smallness, remoteness, institutional weakness, restraining infrastructure and production homogeneity. A region with economies that are small and isolated from integrated economic hubs is really constrained to derive benefit from economies of scale and domestic competition and, hence, likely to experience relatively higher costs of production and to lack competitive edge. Nonetheless, the combination of regional integration and opening of small economies has been seen as a catalyst for growth. High dependency on other economies, heavy reliance on importations and lack of local capacities have hampered development in these regions. It is believed that engaging in intra-regional trade as such would build up local export markets and provide confidence to smaller island economies to compete on a larger scale. Moreover, in addition to the traditional benefit of trade creation, regional integration acts as a platform for incorporation in the world economy and is particularly significant for enhancing effectiveness of small economies.

Comparative Analysis of the Caribbean and the Pacific – A Historical Account

Apart from commonality of issues in regional integration such as smallness, remoteness, poor governance, and so on, the literature draws a parallel between the two regions based on other compelling resemblances, such as the similar historical patterns that the Caribbean countries and the Pacific Island countries have established over the years on their respective journeys towards regionalism. These similarities, of course, accompanied by subtle dissimilarities, are the topic of discussion in the following sub-sections.

Colonial Legacy

A German historian, Richard Konetzke, traces the footing of the Caribbean region dating back to when Columbus set sail in *Santa Maria* to build a settlement on the north coast of Espanola (known today as Santo Domingo and Haiti). The scant background demonstrates that the Antillean islands (a common alternative name for the Caribbean region) were Europe's first economic stepping-stone outside itself.

One may not wish to reduce this to mere harbors of entry, trade destinations, or ports of call; in fact, they were Europe's very first overseas colonies. On the other hand, while Britain was initially hesitant to annex the scattered South Pacific Island group, growing German imperialism prompted the emergence of British influence. New Guinea was annexed by Germany and Papua got annexed by Britain. The two halves of the island came together under Australian rule under the auspices of the League of Nations post–World War I. Samoa and Micronesia were added to the list of Britain's existing annexations (Fiji and the Solomon Islands).

This British heritage made integrating considerably easier than it might otherwise have been within the Pacific and Caribbean regions. However, the literature shows that the level of integration differed. Differences, of course, are a matter of influence too when it comes to regional cooperation. The first such is the spread between the regional island states in the Pacific, whereas distances between the Caribbean isles are shorter. In addition, although the Caribbean is a part of the United States' immediate region due to its proximity, the US has not played a constructive role in the region. The giants Australia and New Zealand, in contrast, have actively participated in the regional development process for the Pacific Islands.
Both regions have also experienced their fair share of friction caused by the superpower nations of the world. Post–Cold War, the Caribbean Basin saw strife between the old colonial powers of Europe and the United States. Whilst Great Britain was pulling its hands away from the region, the US was subtly increasing its influence. Swelling US interest was also due to the (historic) threat once posed by the Soviet Union over missiles deployed in Cuba. History has named the events of October 1962 as the 'Caribbean Crisis'. As for the Pacific countries, though dependence upon colonial administrators is self-explanatory, the Pacific micro-states also attracted interest from outside powers with no former colonial history. Such overtures had been expressed by the former Soviet Union, China, and Japan through diplomatic ties, trade links, and aid and assistance. The North Pacific countries have their eyes set on the vast fisheries of the Pacific Island countries.

The next group of states that view the Pacific as a strategic ground are the United States and France. To them, the region is ideal for nuclear testing, mining operations, and military and communication bases. None of these groups wish to see their influence in the Pacific region dilute and as such clashes and conflicts are unavoidable.

Era of Enslavement

In the 15th century, the then newly colonized settlements required labor in large quantities. Within the Caribbean, "before-slavery laborers were: indentured servants,

convicts, whore, petty thieves, labor organizers , the pariahs of Britain and France, as well as countless native Americans from the inlands themselves and from the mainland; after-slavery there were: contract laborers from India, China, Java, Africa, the Iberian Peninsula and elsewhere" (Mintz, 1974, p. 46). The waves of migration in the Caribbean Region has made it an epitome of as much ethnic, racial, linguistic, and physical heterogeneity as can be discovered in any other region of comparable size in the rest of the world. Noteworthy is also the fact that this transition in the context of that time was always massive:

> More than half a million Indians, both Moslem and Hindu, were shipped to the Caribbean region, most going to Trinidad and Guyana (erstwhile British Guiana), with smaller numbers to Dutch Guiana, Jamaica and Martinique; about 150,000 Chinese were imported, principally to Cuba; more than 30,000 Javanese, entirely to Surinam (Dutch Guiana); even a few Indo-Chinese ended up in the cane fields. Whatever their biases in other regards, the European planters of the Antilles were apparently quite free of prejudices when it came to brute labor—even fellow Europeans would do. Spaniards and Portuguese, in particular, reached the Caribbean colonies in large numbers in the nineteenth century, proving that Europeans too could cut cane beneath a broiling tropical sun. (Mintz, 1974, p. 47)

During the same period in the Pacific region, the colonies' tropical production of copra, sugar, vanilla, cocoa, and other products had become valuable commodities. The European trading companies in charge of controlling these commodities also owned the plantations on which these were cultivated as well as the avenues of shipping and retailing. As such, the late nineteenth century saw a significant immigration of Indian indentured laborers to work on the sugar plantations. The British colonial administrators defended the native land-tenure system which sustained the traditional life of the colonies, for example, the customary chief practices of Fiji and the royalty-based system in Tonga.

Post-independence, the nine states of the South Pacific (Western Samoa, Nauru, Fiji, Tonga, Papua New Guinea, the Solomon Islands, Tuvalu (formerly known as the Ellice Islands), Kiribati (formerly known as the Gilbert Islands), and Vanuatu (formerly known as New Hebrides) got divided into three broad cultural areas: Polynesian (center and east), Melanesian (west), and Micronesian (northwest). Evidently, there is significant cultural heterogeneity within each of these sub-regions (Fry, 1981, p. 456).

Dependence on the Metropolitans

The Caribbean region of perhaps fifty insular societies scattered over more than two thousand square miles of the sea, as well as certain mainland sub-regions, is described by Mintz (1974, p. 46) as just as utterly differentiated as it is complex. The writer goes on to add that the Caribbean is the most richly researched region yet the most poorly understood as well. Many researchers have their unfavorable views as regards the Caribbean's condition. Alonso (1994, p. 582) judges the Caribbean Basin to be at a crossroads since the early 1970s, when indigenous demography were experimented with, by fiat, to replace local populations with outsiders. In the face of political autonomy, even local elites could not save their economies from dependence on the metropolises and the United States. Mintz (1974, p. 45) agrees that dependence had become a habit for the Caribbean. Just consider how long they were dependent on empire for law, language, institutions, culture, even officials.

History has likewise witnessed an inevitable dependence on the part of the South Pacific micro-states on a handful of metropolitan countries Australia, New Zealand, France, Britain, and the United States, along with the European Community, Japan, and the Soviet Union/ Russian Federation. Before 1965, Pacific Islanders had little say regarding decisions concerning the region. The power predominantly lay in the hands of nations having territorial interests—Britain, France, the Netherlands, the United States, Australia, and New Zealand. These combined to form the South Pacific Commission (SPC) in 1947. SPC, now known as the Secretariat of the Pacific Community, was established to "encourage and strengthen international cooperation in promoting the economic and social welfare and advancement of the peoples of the non-self-governing territories in the South Pacific region" (Haas, 1989, p.32). Initially, during the formation of SPC, there were several rebellious efforts from nearly all Island Representatives, led by Sir Ratu Mara of Fiji, which resulted in the adoption of a memorandum of understanding (MOU) in 1974 that granted the Island delegates fair authority in regional affairs.

The Concern for Sovereignty

The beginning years of Caribbean integration were filled with struggle. While on one the hand there was a range of non-traditional security issues such as drug smuggling, on the other hand there was a rise in health pandemics. Already burdened with concern on sluggish integration, the member states were alleged of placing national interests ahead of regional and to be lacking in functional cooperation (CARICOM, 2005).There were questions of trading off sovereignty for higher trade exchange as well as the overpowering of the market by the bigger players. Dating back to 1965, the very first Heads of Government Summit was held to discuss the advancement of

regional community. As a result, the CARIFTA (Caribbean Free Trade Association) was formed. CARIFTA was primarily formed to boost economic activity by removing tariffs on imports and quotas on goods produced within the Caribbean trade bloc. Troubles arose when it was realized that many of the partner Caribbean islands generated revenue from imposed trade tariffs and had become reluctant to remove these barriers. Later, discussions on CARICOM (Caribbean Community and Common Market) arose when smaller and poorer states of the Eastern Caribbean had complained that CARIFTA's existence benefitted the 'big four' countries of Barbados, Guyana, Jamaica, and Trinidad-Tobago (Corkran, 1976, p. 65). It was cited from the Guyana Chronicle, 2005 where the President of Guyana stated, "it is not an easy task to sell CARICOM to Guyanese as an integrated community with benefits to be derived when they are treated better outside of CARICOM than at regional ports of entry." Although the issue of 'sovereignty' was conflicted, it was unanimously agreed that CARICOM was not merely a regional integration platform but depended principally on shared cultural identity. The current befitting workhorse of Caribbean integration, CARICOM had to tackle the sensitive issue of sovereignty before any real regional economic planning could be undertaken.

In the South Pacific, conflicts of interest arose when the Pacific micro-states set on promoting and engaging in regional projects demanding enormous levels of resource commitment and substantial integration. A question of forgoing sovereignty arose when, to the disappointment of other Pacific Islands, many regional institutions got based in Fiji, e.g., USP (the University of the South Pacific), SPEC (the South Pacific Bureau for Economic Cooperation), the SPC Community Education Centre, the Telecommunications Training Centre, and Air Pacific. This stirred up tensions between Fiji and other island nations, which triggered a fight for power amongst the countries. Further rigidity set in, once there was metropolitan inclusiveness in regional affairs, for instance, the United States' involvement in the regional fisheries agencies. The regional cooperation turned into a political skirmish for power among the Pacific Island Countries, mainly including Fiji, Papua New Guinea, and Western Samoa.

Presence of Regional Organizations

Although it appears that economic integration has not been optimally realized yet in either region, many regional organizations have been orchestrated to assist the efforts of further economic cooperation. These organizations enhance regionalism in the arenas of education, government administration, resource management, disaster rehabilitation, justice, and law and order. Against the backdrop of distant routes, developing economies, and slim markets; without the strong presence of such regional bodies the island-states would become immaterial; they would lose their

voice and their standing internationally. It is evident that the regional leaders are aware of the gravity of the situation. The table below is a compilation of regional organizations in the Caribbean and the Pacific that have been stepping stones towards regional trade integration.

Route to Regionalism

Never before has there been a greater need for these two regions to face the challenges posed by globalization head-on. The changes in WTO rules and decisions demand austere actions. For instance, the General Agreement on Tariffs and Trade, Article XIII[1], led to the removal of the preferential trade arrangements that affected the banana industry and sugar industry in both the Caribbean and the Pacific. Furthermore, WTO's mandate to reduce worldwide tariffs has worsened the competitiveness of the regional industries. The Caribbean and the Pacific, alike, have not always been able to keep abreast of technological advancements and evolving international trading patterns. It is not surprising, then, that promoting regionalism is no longer just a preference but rather a necessity. The following section discusses the journey of the two regions towards regionalism, in chronological order.

The Caribbean Basin

As early as 1958, the Caribbean began its evolution of regionalism with the establishment of the British West Indies Federation, in order for the small island economies to survive decolonization. The Federation was a political unit formed with the aim of regaining independence from Britain as a single Caribbean state. The Federation came to an end in 1962, without having achieved much due to an internal conflict of sovereignty. However, what the Federation did plant was an idea of odds through cooperative and centralized processes. The next three years saw the formation of a centralized regional cooperation in the management of the University of the West Indies which was later followed by developments in the regional shipping services, the Caribbean Meteorological Service (Rolfe, 2007, p. 101).

The Regional Heads of Government held their first summit in 1965, to discuss the concept of a regional community and as an outcome the Caribbean Free Trade Association (CARIFTA) was developed. The Commonwealth Caribbean Regional Secretariat was established in 1968 and the Caribbean Development Bank in 1969. Both were designed after the formation of CARIFTA to enhance the benefits to the region economically and developmentally through expansion and diversification of regional trade.

[1] GATT Article XIII: importation of any product must be applied consistently to all WTO Members.

Table 1. Selected Caribbean Regional Organizations and their Memberships

Organization	Membership
Association of Caribbean States (ACS) - was formed with the objective of improving transportation, enhancing trade, facilitating sustainable tourism, and having effective and coordinated response to local natural disasters in member countries.	Antigua and Barbuda, Bahamas, Barbados, Belize, Colombia, Costa Rica, Cuba, Dominica, Dominican Republic, El Salvador, Grenada, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, St. Kitts &Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Trinidad & Tobago, and Venezuela.
Caribbean Court of Justice -is the judicial body for the Caribbean Community (CARICOM).	Antigua &Barbuda, Barbados, Belize, Dominica, Grenada, Guyana, Jamaica, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Trinidad & Tobago
University of the West Indies -was formed with aim of developing economic and cultural growth in the Caribbean.	Anguilla, Antigua and Barbuda, Bahamas, Barbados, Belize, British Virgin Islands, Cayman Islands, Dominica, Grenada, Jamaica, Montserrat, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Trinidad & Tobago, Turks and Caicos Islands.
Global System of Trade Preferences among Developing Countries (GSTP) -is a preferential trade agreement, signed (1988) with the aim of facilitating trade between developing member countries.	Algeria; Argentina; Bangladesh; Benin; Pluri-national State of Bolivia; Brazil; Cameroon; Chile; Colombia; Cuba; Ecuador; Egypt; Ghana; Guinea; Guyana; India; Indonesia; Iran; Iraq; Democratic People's Republic of Korea; Republic of Korea; Libya; Malaysia; Mexico; Morocco; Mozambique; Myanmar; Nicaragua; Nigeria; Pakistan; Peru; Philippines; Singapore; Sri Lanka; Sudan; Tanzania; Thailand; the former Yugoslav Republic of Macedonia; Trinidad &Tobago; Tunisia; Bolivarian Republic of Venezuela; Viet Nam; Zimbabwe.

Sources: Table information from Rolfe, 2007, p. 102; memberships from WTO website; objectives of the organizations from individual websites.

By 1971 all the region's (British) Commonwealth Island states and territories had joined CARIFTA in an effort to liberalize trade in manufactured goods and provide for managed trade in agriculture goods; it also contained special arrangements for the smaller countries of the Eastern Caribbean (Bannock, Baxter, & Davis, 2011,p.11). The difference of course between CARIFTA and the earlier agreement was that the former sought to attain political integration while the latter was focused on economic cooperation. CARIFTA was supposed to remove trade barriers, to benefit all members equally. This was believed to have transformed into a common market and customs union (Corkran, 1976, p. 52). CARIFTA was successful to the extent that exports proliferated, but along with that came wealth disparities within the region (Rolfe, 2007, p. 105). Corkran (1976) found cases of complaints, by smaller countries in the Eastern Caribbean that CARIFTA was biased towards benefitting larger countries like Barbados, Guyana, Jamaica, and Trinidad & Tobago. Hence, CARIFTA had been compromised and seemed not to meet the full expectations of the Heads of the Government.

In 1973, CARIFTA was transformed into a new community called Caribbean Community and Common Market (CARICOM). CARICOM had three broad pillars: "economic integration (a common market); functional cooperation (education, health and several other areas)[;] and foreign policy coordination" (CARICOM, 1973, Article 4). The Association of Caribbean States (ACS, 1994) was also designed during the same period, with the intention of promoting trade, sustainable tourism, the environment, transport and natural disasters (ACS 2005). Serbin (1994), Phillips (2002) and Girvan (2006) agree that ACS lacked cohesion and complete agreement by its members. Economic integration meant free movement of goods, services, capital, and people. The second pillar was to combine members' limited resources in areas like education, health, environment, science and technology, communications, meteorology, response to natural disasters (Warner & Anatol, 2015, p. 188), ultimately to foster the region's external position through coordinating member states' foreign policies. It was later noticed that CARICOM was not comprehensive enough and that it failed to address the stated objectives under the aforementioned separate pillars.

Therefore, partially as a result of and partially unconnected with CARICOM's development, seven Eastern Caribbean states formed the Organization of Eastern Caribbean States (OECS) in 1981. This replacement organization was established through the signing of the Treaty of Chaguaramas with the immediate membership of the region's four independent states; Barbados, Guyana, Jamaica, and Trinidad & Tobago (Rolfe, 2007, p. 101) (see Table 1). The OECS was formed with the objective of protecting sovereignty. Eight of the nine members of OECS (Anguilla, Antigua and Barbuda, Dominica, Grenada, St. Kitts and Nevis, St. Lucia, Montserrat, and St.

Vincent and the Grenadines) share a common currency managed by the Eastern Caribbean Central Bank (Warner & Anatol, 2015, p. 188), and the Central Bank is in charge of maintaining financial integrity and transparency for these OECS states. Today the OECS has objectives to promote cooperation, to harmonize foreign policy, and to advance economic integration (OECS, 2005b). It is believed that OECS was successful in solving issues that CARICOM could not; for instance, starting in 2011, OECS ensured that all people from the sub-region would be able to move and work freely in other member states. The formation of OECS has also had positive outcomes in terms of levels of aid and technical and financial assistance (Lewis, 2003, p. 333).

During 1989, the Single Market and Economy was created. The common market had been replaced by the CARICOM Single Market and Economy (CSME), designed to be more responsive in the era of globalization. The CARICOM Single Market was officially inaugurated in 2006 and the Single Economy is scheduled for completion in 2015 (Bannock et al., 2011, p. 12). The reforms under CSME included free mobility of certain classes of people as well as movement of goods, services, and capital, through measures such as removal of all barriers to intra-regional trade and harmonizing standards so as to increase acceptability of goods and services being traded. It involved the formation of a monetary union, implementation of the Common External Tariff, and adoption of a common incentives programme (Rolfe, 2007, p. 106). CSME also ensured the right to establish CARICOM businesses in any Member State without restrictions and made provision for sharing collected customs revenue and external goods importation (Bannock et al., 2011, p. 19).

All in all, in the Caribbean, CARIFTA was the starting point of regionalism. This Caribbean Free Trade Agreement was active from 1968 to 1973. It stimulated regional exports of light manufactured goods; however most advantages skewed towards larger countries in the region. While convinced by the effectiveness of economic integration, the countries replaced CARIFTA with another agreement: CARICOM. The Caribbean Community Common Market reigned for almost three decades (1973–2006). It was a customs union with expanded scope to not only cover merchandise trade but also to facilitate provision of services, capital, and labor. The CARICOM council supported foreign policy harmonization as well as functional collaboration of education and health affairs. Post-2006 to date, the CSME has been driving social and economic integration in the region by forming a trade bloc. The CSME, along with the other features of CARICOM, added elements of currency union and functional cooperation on macroeconomic policy, sectoral policy, and external trade policy harmonization.

The Pacific Way

'The Pacific Way' terminology was coined by Fiji's former statesman, Ratu Sir Kamisese Mara to describe the Pacific region's ceremonial and lionized form of negotiations, discussions and dialogue. A revisit into the history of the South Pacific confirms the overgrowing interests of many metropolitan countries, the likes of Britain, France, the Netherlands, the United States, Australia, and New Zealand. As a result of which, in 1947, the South Pacific Commission was inaugurated to coordinate social and economic development of the dependent countries in the region (Haas, 1989). The leaders of the Pacific Island Countries demanded equal authority in deciding for the region and hence a memorandum of understanding was signed in 1974.

In order to accentuate indigenous control, another regional organization was established in 1965—the Pacific Island Producers' Association (PIPA). This organization was initiated by Fiji and later joined in by Western Samoa, the Cook Islands, Niue, Tonga, and the Gilbert (Kiribati) and Ellice Islands (Tuvalu). Initially, the aim of PIPA was to supplement closer cooperation amongst Pacific islands supplying bananas to the New Zealand market. However, at a later stage, this expanded to include shipping, marketing, and research as well (Fry, 1981). Many authors believe that a country's sheer economic weight gives it a voice and a role; following this notion Tupua Tamasese Lealofi IV, then Prime Minister of Western Samoa, asserted, at the 1971 PIPA Conference, "This is the strength by islanders, and created by islanders, and successful only from the efforts of such" (Fry, 1981, p. 463). This Polynesian assertion concluded in 1973 only after the formation of another organization with a broader role.

In the early 1970s, the Pacific leaders realized the need for a platform to promote political cooperation, one in which Pacific challenges could be addressed with one voice. In 1971, Fiji, Western Samoa, and the Cook Islands initiated the South Pacific Forum (SPF) (renamed to Pacific Islands Forum in 2000), because of many restrictions under SPC. Other island nations joined eventually, along with Australia and New Zealand. The discussions were widespread; however, much attention was given to discussions of French nuclear testing, decolonization, shipping, civil aviation, telecommunications, trade promotion, bulk purchasing, and the control of fishing resources (Fry, 1981, p. 464). In 1972, the South Pacific Bureau for Economic Cooperation (SPEC) became SPF's center for research and development. SPEC had been instrumental in coordinating negotiations with the European Community—promoting trade, examining feasibility of a regional shipping line, and contemplating matters of telecommunications and fisheries (SPEC, 1980).

The South Pacific Forum faced a major impediment, as it required considerable commitment in terms of natural resources as well as a compromise of national sovereignty. It was difficult at this point to prove how much regionalism had been practiced, as the negotiations put in place generally epitomized a lesser degree of integration. Fry (1981) cited examples of negotiation by individual countries for preferential access to external markets like the European Union, Australia, and New Zealand. This was contrary to the function of SPF in encouraging regional integration.

The South Pacific Forum then established three sub-regional groupings in the late 1980s. Alongside the South Pacific Forum, other Oceanic Regional Organizations were designed to provide a clearer mandate for specific activities. The first group, known as the Melanesian Spearhead Group (MSG), was formed in 1987 between Papua New Guinea, the Solomon Islands, and Vanuatu, and later joined by Fiji in 1996. It mediated trade disputes between members, advocated the development of a regional military security force, and considered the merits of a sub-regional air services agreement (Rolfe, 2007, p. 113). The second grouping constitutes smaller island states such as the Cook Islands, Kiribati, Marshall Islands, Nauru, Niue, and Tuvalu. This group discusses policies for such countries regarding regional transport infrastructure, climate change, and development funding (Rolfe, 2007). The third grouping, known as the Micronesian 'compact states' (Marshall Islands, Federates States of Micronesia and Palau), were part of the Free Association with the United States. The member countries of Compacts of Free Association (CFA) receive financial support and controlled access to education and health. In addition, these states get duty-free, non-reciprocal exports to the US to a certain degree. Surprisingly enough, these three groups of small islands work separately to pursue their interests and do so while keeping the wider interests of the Forum in prospect.

Even so, attempts to develop a regional airline and a regional shipping line have been less than successful in the past. The need for a proper transport infrastructure in the Pacific has already been acknowledged; however, in a region of small, widely separated, economically weak Island states, private operators would only operate if they could make a profit (Rolfe, 2007, p. 116). This difficulty in a region of small numbers and vast distances called for public sector cooperation.

An illustration of such government cooperation can be seen in the area of regional security. The peacekeeping operation in Bougainville (Rolfe, 2001) and stability operations in Solomon Islands (Kabutaulaka, 2005) are remarkable examples of 'Pacific solutions for Pacific problems'. Other regional achievements have been the development of a regional nuclear-free zone in 1985 and the 1991 improvement on a regional fishing regime, which banned driftnet fishing (carried out by other

nations).

Moreover, in 1981 came about the development of the South Pacific Regional Trade and Economic Cooperation Agreement (SPARTECA), which received "duty free and unrestricted access on a non-reciprocal basis to the Australian and New Zealand markets" (Ministry of Foreign Affairs and Trade, 1996, p. 25). Some authors criticized SPARTECA as a platform to foster further dependency (Schultz, 2012); however, in several Asia Development Bank (ADB) reports a few positive impacts had been also noted. Australia's and New Zealand's slow but growing openness to other countries was a clear signal for the Pacific Islands to opt for a different approach towards economic liberalization.

The Pacific Island Countries Trade Agreement (PICTA) and Pacific Agreement on Closer Economic Relations (PACER) come into picture to provide "a basis for increasing regional integration and as a means to effectively prepare members' economies to respond to globalization" (Pacific Islands Forum, 2001). Again, criticisms for these agreements are many. PICTA was signed in 2001 and came into force in 2003, but only became operational as of 2007 (Prasad, 2008, p. 91). It was designed to enhance trade between the 14 member countries by reducing tariff barriers to zero, allowing a period of protection for selected products in order to support infant industries. The reasons underlying this is the fact that the key obstacle to inter-island trade is not trade barriers, but rather is the voluminous transportation costs due to considerable distances between the islands themselves, low economies of scale, and a lack of diversity between the items of trade. Connell and Soutar (2007) starkly verify that there is simply little to exchange between the Pacific Island Countries, citing one instance from the past—the 'kava-biscuit war' of 2004–2005. This case study shows breach of regulations under PICTA and MSG when Fiji banned kava from Vanuatu and in exchange Vanuatu sought to protect its biscuit industry from the more developed Fijian industry. Neither Fiji nor Vanuatu could be penalized as their actions reflected the sensitivity of trade in the region, when both the states have very little to trade. If anything, PICTA had been provoking competition rather than cooperation between the island states.

On one hand, amongst the region's top four export destinations only Tuvalu traded with a PICTA partner (7% of its total exports with Fiji). On the other, from within the region only Tuvalu (45.8%), Kiribati (27.5%), Samoa (20.5%) Tonga (26%) and Cook Island (6%) imported from the (same) PICTA partner - Fiji. According to the study by the Institute of International Trade (IIT 2008) this confinement was due to two reasons: (i) Fiji's impeccable location making it a transshipment hub and (ii) regional trade being higher for services (particularly communications and government services) than for goods. Consequently, to make PICTA truly a region-

wide integration, inclusion of trade in services was inevitable. In 2004, PICTA got upgraded to PICTA Trade in Services (TIS) to cover 11 service sectors: business, communication, constructions, distribution, education, environmental, financial, health, tourism, recreational and transportation. PICTA TIS under negotiation currently are categorized in two broad areas: Trade in services for Sectoral Liberalization and Temporary Movement of Natural Persons. It was not until the deadline for the tariff- cuts in 2009 that the members of PICTA could utilize the provisions. Although at present no substantial progress has been made under the two categories, supporters affirm the future of PICs' as optimistic. Henceforth the Pacific Islands Forum Leaders are working towards creating a single regional market through extension of PICTA to PICTA TIS.

In the intervening time, Papua New Guinea and Fiji signed an interim Economic Partnership Agreement (EPA) in 2007 to maintain preferential access to Europe for processed tuna and raw sugar. While the rest of the Pacific Island Countries had little interest in European Union's EPA, Fiji and Papua New Guinea would have had to face significant raise in tariff rates had they not cooperated. Controversial as it is, PICs argue that EU's push for a new EPA is purely a strategy to access Pacific's raw material before the Islanders strike a deal to trade these resources with their (EU's) Asian rivals (PANG, 2008).

Further, the Pacific Agreement on Closer Economic Relations is a framework of which PICTA is an arm of. Negotiations on PACER had started in 2001 however was not in force until 2011 (Prasad 2008, p.91). Unlike PICTA, PACER included the two giants – Australia and New Zealand. The PACER commits all members to begin negotiation towards a free trade agreement by 2011 at the latest. Qalo (2003) argues that one of the shortfalls of PACER is that there is a scope for the current trade imbalances to increases under free trade agreements mostly due to Australia and New Zealand being highly efficient producers.

When Australia gains unprotected markets in the Pacific Small Island Developing States (SIDS) they could displace local producers. Adding on, Scollay (2001) writes that the economic effects are likely to be very small, may be negative for some Forum Island Countries'. An extension of the PACER agreement currently being debated is the PACER Plus.

The discussions regarding PACER Plus started when Australia and New Zealand (ANZ) brought to attention the Most-Favored Nation (MFN) obligation. Australia and New Zealand emphasized that PIC's having negotiations with European Union for preferential market access under EPA had triggered the MFN clause. As a result, ANZ introduced PACER Plus for free trade arrangements. The motive of PACER

Plus is to prioritize on issues of trade facilitation, regional labor mobility, shipping, aviation, telecommunication and water infrastructure. Nevertheless, it is also acknowledged that the benefits of such agreements will only manifest given strong effective domestic reforms. Pacific Islands are yet to improve on supply-side constraints, regulatory and governance policies and institutional arrangements. Deliberations on PACER Plus are on-going ever since. Many have criticized saying that PACER Plus is only benefitting the economically powerful in the region – Australia and New Zealand. The argument has reached an extent where the two largest Pacific countries are on the verge of retreating. Papua New Guinea's trade minister has declared PNG's withdrawal from this agreement already while Fiji having withdrawn once is currently uncertain. PACER Plus' cohorts believe that it will boost economic growth in the region but views of the PIC Heads differ.

Reflections

Purportedly, regionalism is working well for the Caribbean region (Warner &Anatol2015; Simms & Simms, 2007; Bennett 1999). However; the same cannot be claimed for the Pacific region. A closer look at the development of integrational arrangements within this paper brings to light subtle differences in the execution of these arrangements between the two regions.

When compared with other discussed trade arrangements, the spectrum of the Caribbean Community and Common Market agreement makes it the most robust trade agreement. CARICOM was as a result of the plight from smaller island countries upon being marginalized by other larger countries in the Caribbean region. It was not only a response for fair trade but also the Revise Treaty (Revised Treaty of Chaguaramas, Chapter 4, Article 51) under CARICOM assisted in the growth of intra-regional firms by allowing freer flow of capital and labor. The Pacific region still faces restrictions in this forefront. In addition, as evident in many of the Caribbean arrangements, integration amongst the countries of the region is practiced at a very advanced level. For instance, in the formation of OECS, eight of the nine countries are unionized under a common currency which is administered by a central bank. It is the Eastern Caribbean Central Bank which has also harmonized the macroeconomic policies and foreign policies of the member states. Moreover, under CARICOM Single Market Economy (CSME) there have been developments to co-ordinate national policies of Member States and the establishment and maintenance of an investment friendly environment (Warner & Anatol, 2015). Whilst the success of this protocol is not verifiable, a step toward pro-investment policy is definitely in the right direction.

In terms of chronological order; efforts of regional integration in the Caribbean

region (be it economically, politically or functionally) substantiated approximately two decades prior to the negotiations in the Pacific. For the Caribbean, initial attempts of integrating regionally started with CARIFTA in the year 1965. One of the cited advantages of CARIFTA agreement was the increase in regional export in manufactured consumer products from Jamaica and Trinidad and Tobago (Bennett 1999, p. 136). In contrast, the Pacific talks of regional integration had not started until 1981. Although SPARTECA had stirred discussions on regional trade, its progress was sluggish. Concurrently the Micronesian CFA and Melanesian MSG were established. During this long gestation in the 1980s, the Pacific Island member countries lacked political conviction. It was reasoned that this lack of commitment was based on substantial rivalry amongst the island nations due to the similarity in their production baskets. Such conflict was demonstrated when, after the implementation of the MSG; several factories in Vanuatu were forced to shut down because they were incapable of competing with the trade in fiberglass and tinned fish from other Pacific countries. By the same token, due to the increase in imported beer from the Solomon Islands, Vanuatu's locally brewed beer has been run out of business. Likewise, many countries are unable to match the low cost of Fiji's bottled water, thus these infant firms had to shut down. At this juncture, PICTA was negotiated in order to include Australia and New Zealand in the trade equation. Furthermore, trade in services were additional elements of inclusion under PICTA TIS and PACER Plus trade negotiation. Nevertheless, the argument overgrowing competition rather than cooperation within the Pacific region remains.

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Conference Review: International Conference on Sustainable Alternatives to Poverty Reduction and Ecological Justice (SAPREJ-18), The University of the South Pacific, 26-29 June 2018

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From June 26-29, 2018, the 18th international conference on Sustainable Alternatives to Poverty Reduction and Ecological Justice (SAPREJ-18) took place at The University of the South Pacific (USP). The aim of the conference was to strengthen academic and interfaith dialogue on major social and environmental challenges that the Pacific Islands and other parts of the world are facing in the 21st century.

SAPREJ-18 was the fourth conference in a series. The series was established by the Orthodox Academy of Crete at Kolympari, Chania, Crete, where the first international conference on Sustainable Alternatives for Poverty Reduction and Eco-Justice (SAPREJ-12) took place in September 2012.

The aim of the SAPREJ conferences is to engage in dialogue on key social, economic, and ecological concerns from a variety of perspectives. Its goals include the promotion of social and ecological justice (among others). SAPREJ focuses both on religiously based as well as academic approaches to challenges of sustainability and injustice.

After the 1st SAPREJ in 2012 in Crete, organizers and participants felt a need to engage particularly scholars and practitioners in the developing world in dialogue about poverty reduction and eco-justice. Accordingly, SAPREJ-14 was organized and held in 2014 in Antananarivo, Madagascar. Two years later, in 2016, more than 100 scholars met for the 3rd SAPREJ conference at the Kyambogo University in Kampala, Uganda. At this occasion the School of Geography, Earth Science and Environment at USP was selected to host the conference in 2018, discussing issues

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of environmental ethics, poverty, and sustainable development in the face of the threat of climate change.

SAPREJ-18 attracted some 35 social scientists, clerics, activists, and governmental representatives from 22 countries (Australia, Belize, Canada, Chile, Denmark, Fiji, France, Germany, Greece, India, Israel, Kiribati, Mali, Philippines, Solomon Islands, Switzerland, Tonga, Turkey, Tuvalu, Uganda, UK, and the USA), including six participants from Iran, who delivered their presentations via video conferencing, and one participant who addressed the audience remotely from the Climate Change meeting of the World Council of Churches being held in Buenos Aires, Argentina.

On June 26, 2018, the guest-of-honor, Mr. Penijamini Lomaloma, Deputy Secretary General of the Pacific Islands Development Forum, highlighted the responsibility people today have to assure that living conditions for generations to come will be humane. Mr. Lomaloma stressed that it would be irresponsible to continue business as usual. He demanded considerable change in the way people treat each other as well as the environment. The abolition of poverty and an end to environmental degradation need to go hand in hand. To achieve both of these aims, science and religion are equally important and need to cooperate.

In the keynote address, Professor Matthew Allen, Director of Development Studies at USP, spoke on "Natural Resource Justice? The Political Ecology of Resource Extraction in the Western Pacific." The keynote address was a very timely acknowledgment that issues related to political and economic realities of resource exploitation in Melanesia pose very serious threats to local communities. These threats have existed since colonial times, but even in an era of formal independence they add to the vulnerabilities of local communities in many ways. Impacts of climate change do not create such vulnerabilities, but they increase the challenges people are facing.

The first day of the conference was dominated by papers on social justice and poverty alleviation in the context of environmental and climate change. Liam Saddington (Oxford University) talked on "Small Island Imaginaries, Climate Change and Geopolitics: An Examination of Seychelles and Kiribati"; he was followed by Renata Varea and Rufino Varea (both of USP), who looked at aspects of environmental entitlements in their paper titled "Environmental Inequality and Ecological Justice: Pretext of Environmental Entitlement in Community-based Marine Management in Fiji." Professor Heather Worth and her PhD scholar, Karen McMillen, (University of New South Wales, Sydney) presented on their research on "Climate Change, Urban Poverty and Sex Work in the Pacific." Another paper on urban poverty and social justice was presented by Camari Koto (USP) in her paper on "Questioning

Social Justice in Informal Settlement Upgrading: The Case of Namadai."

The afternoon session of Day 1 started with a paper on "Gender and Social Capital Dynamics in Adaptation to Climate Variability and Change in Semi-arid Northeastern Nigeria" by Othniel Yila (Climate Finance Adviser, Kingdom of Tonga) and Jummai O. Yila (International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Mali), before Aylin Yildiz (University of Bern) talked on "A Legal Challenge for Ecological Justice: What Is Our Common Normative Framework?" Day 1 ended with a video conference presentation from Tehran, Iran, on "Protecting Environment's Protectors" by Ali Akbar Siapoush, (Shahid Beheshti University, Tehran).

Day 2 put emphasis on ethics, interfaith dialogue, and justice in development. The day started with Reverend Grace Lubaale (Kyambogo University, Uganda) on "Poverty in Uganda: Causes and Strategies for Reduction with Great Emphasis on Ethics and Ecological Justice" followed by Markand Bhatt (USP) who spoke on "Approaches to Sustainability Based on Hindu Scriptures." Professor Natasha Delani Kuruppu (UNEP DTU Partnership, Technical University of Denmark, København) and Peni Hausia Havea (PACE-SD, USP) talked on "The Role of Church and Indigenous Spirituality in Community Led Health Adaptation" before Lesya Sabada (University of Saskatchewan, Canada) concluded the morning session of Day 2 with her presentation on "Eastern Christian Theological Resources in Action For Peacebuilding and Environmental Ethics."

The remainder of the morning on Day 2 was an interfaith panel discussion on ethical considerations concerning poverty and environmental and ecological justice. Members of the panel were: The Most Reverend Winston Halapua, Archbishop of the Diocese of Polynesia of the Anglican Church; Reverend Jeremaia Waqainabete, Deputy General Secretary of the Methodist Church in Fiji and Rotuma; Paul B Whippy, Welfare Manager, The Church of Jesus Christ of Latter-day Saints; and Roshni Pal, Fiji Hindu Society. Archbishop Halapua told the participants of the conference that, in all the decades he has served for the Anglican Church in the Pacific Island region, this was the first event ever of this kind and he leaves the conference as a different person than he was before he came to attend the meeting. He was particularly impressed by the depth of interfaith discussions and dialogue the conference facilitated.

The afternoon on Day 2 started with a video conference presentation from Buenos Aires, Argentina, where at the same time a Climate Change meeting of the World Council of Churches (WCC) took place. Lucas Andrianos (WCC, Greece) talked on "Oikos Spiritualities and Greed Line Concepts as Principles of Sustainability." After

two more presentations, one on "Enabling Equity and Poverty Reduction through Community Sustainable Fisheries Management—Case Study from Qoliqoli Cokovata, Macuata Province, Fiji" by Francis Areki (WWF-Pacific, Fiji) and one on "Ethics, Food and Biodiversity—Traditional Food Security Knowledge and Humanitarian Aid in the Phase of Climate Change" by Ilaisa Naca (USP), two further video conference presentations from Tehran, Iran, one by Razieh Mehrdadfar (Tehran, Iran) on "Children's Education as an Essential and Accessible Sustainable Solutions for Poverty Reduction and Ecological Justice" and one by Zhila Fathi (Iran University of Applied Sciences and Technology, Shabestar, Iran) on "International Obligations of Governments to Educate Citizens to Protect the Environment," concluded Day 2.

On Day 3, some of the participants went in small groups to nearby squatter settlements to gain a first-hand impression of social, economic, and environmental challenges there. Others went to a community close to Suva where communities had established Marine Protected Areas. The opportunity to see development challenges in Fiji as well as people's initiatives to make a difference was highly appreciated by participants from outside Fiji and the Pacific Island region.

Day 4 started with "Water Scarcity and Its Negative Impacts on Health – A Case Study of Funafuti, Tuvalu" presented by Maluseu Tapaeko (University of Porto, Portugal); this was followed by Catherine Garnett-Santiago (Belize), who talked on "Urban Livelihoods of Landless People – A Livelihood Vulnerability Assessment of an Informal Settlement in Suva, Fiji."

"Is There Any Chance for the Poor to Cope with Extreme Environmental Events? A Case Study in the Solomon Islands" was the question asked by Michael Ha'apio, Morgan Wairiu (both PACE-SD, USP), and Ricardo Gonzalez (Universidad de La Frontera, Chile) in their presentation.

From New York (USA), Professor Seyed Masoud Noori (NYU Law School) and Hossein Hafezian (Montclair State University, New Jersey) gave a video conference presentation on "Women's Participation in Policies and Decision Making as Prerequisite in Achieving the Sustainable Development Goals (SDGs)."

In the afternoon of the last day, Alice Tekaieti (Tarawa, Kiribati) talked about "Sustainability and Indigenous Knowledge: The role of Schooling in Kiribati." This was followed by three video conference presentations :"The Right to Food and the Right to Environment: Accompaniment or Conflict?" by Alireza Mohammadnezhad Daryani (Islamic Azad University, Tehran) and Zhila Fathi (Iran University of Applied Sciences and Technology, Shabestar, Iran); "Women's Education and

Leadership as Essential and Accessible Sustainable Solutions for Poverty Reduction and Ecological Justice" by Zahra Azhar (Shahid Beheshti University, Iran) and Shahideh N. Mohajer (Ecole des hautes études en sciences sociales, EHESS); and "Displacement Due to the Natural Disasters, Refuge Status and Sustainable Development" by Hiwa Hajimolla (Shahid Beheshti University) and Aida Abdollahi (Iran). The conference ended with a presentation by Eberhard Weber (USP) on "Globalization and Poverty in India: How Do Human Rights Relate to It?"

All in all, the conference attracted some 120 participants other than the presenters. Members of the Fiji Government, including the Minister for Waterways and Environment, Dr. Mahendra Reddy, as well as members of the opposition such as Mr. Niko Naiwaikula, joined in the discussions.

In closed sessions of the organizers, it was decided that the next SAPREJ, in 2020, will be held in Kenya.

Information for Contributors

The Journal of Pacific Studies (JPacS) welcomes contributions from a wide range of Pacific Studies topics from both historical and contemporary perspectives. Topics should be related to the Pacific Islands Region and may include but are not limited to the fields of Accounting, Business Studies, Development Studies, Economics, Geography, Land Management, Management, Marketing, Marine Affairs, Political Studies, Sociology and Tourism Studies.

Manuscripts must be previously unpublished and not under consideration for publication elsewhere. Manuscripts will be returned only by request.

Following initial screening, papers are reviewed by two or more anonymous referees using these criteria: Relevance and/or currency of interest to the Pacific Islands. Contribution to the literature and/or current debates. Originality, balance, scholarship. Argument, organization and presentation. The final decision to publish is retained by the Editor and the Editorial Board. Referees' comments will be made available anonymously to the author.

Submissions, addressed to the Editor (see addresses, inside front cover), must comply with the following requirements:

Maximum length: 8000 words (book reviews 1000 words) including notes.

Style: In general matters of style, referencing etc., the American Psychological Association (APA) Referencing style will be used.

Spelling: British (not American) spelling is preferred. Follows the Concise Oxford Dictionary.

Notes: foot notes (no end notes) and single spaced.

Reference list, commencing on a new page, of all (and only) cited references listed alphabetically by author and, within author, by date, title and publisher. Use italics for book and journal titles, single inverted commas for article titles, and no markings for presented papers or unpublished texts. Chapters and articles should show page numbers. See *Style*.

Abstract: all manuscripts should add a 150–200 word abstract. The submitted script should have 5 keywords only.

Cover page: A separate cover page must include: title, author's name, affiliation, postal, fax and e-mail addresses, and a list of tables, maps and figures accompanying the text. The author's name should not appear on the first page of the text manuscript or be identifiable as such within it.

Maps, Tables, Diagrams, Graphs: Indicate location in text and submit camera-ready copies on separate pages. Electronic copy is also acceptable. Original data must accompany all graphs. Publication will be b & w. Any necessary copyright clearances are author's responsibility.

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