

Abstracts and biodata

Prof. Chalapan Kaluwin

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Climate change, atmosphere and mining of oceans poses a long term disaster in achieving sustainable development in PNG and Pacific Island states

The short term studies and research in improving the understanding of science of climate change, variability, sea level changes and deep sea/ocean explorations in Papua New Guinea (PNG), Tonga, Fiji, Solomon Islands and the Pacific Island States poses the greatest disasters to the livelihoods of the communities will be presented and discussed. Since 1990 scientific and environment results, studies (mainly desk top models) and reports carried in the many Island Nations of the Pacific region submitted to the UN Sustainable Development Goals, Pacific Island leaders and their governments for consideration should be treated with caution and precautionary principles must be applied until full scientific proof is available. Application of adaptation measures and technology in the tropical marine ecosystem has very serious limitation on PNG and Pacific Islands in oceans, atmosphere and coastal areas must be evaluated and monitored for its mitigation measures. Our studies and results since 1991 on climate change and sea level rise (6-8 mm/yr), managing a 2 C degrees change before 2030, influence of El Nino/La Nina and other drives such warm pool and deep sea mining impacts on resources and include; species extinction and loss of biodiversity; sediment plumes and tailings pollution of the entire water column; absorption of heavy metals and toxins by marine animals, including commercial fisheries; the disturbance of marine mammals from constant noise and light in the water; the risk of oil spills and accidents from increased vessel and surface traffic; the destruction of coral reefs through increased acidity of water; increased carbon emissions and temperature. In addition introduction of new technology (SEAFRAME, Satellites, Gliders etc) to support research with partners such as France, USA, Australia, Japan governments to improve our models and support the decisions/policies processes. The poor application of international laws [such the UN Framework on Climate Change Convention (Kyoto Protocol, Paris Agreement) United Nations Law of the Sea, UNCLOS, International Maritime Organisation (IMO) Laws, Noumea Treaty, UNCED agreement) and Pacific Regional laws and policies (Mining Acts, Environmental Act etc] on Climate Change, variability and deep sea mining is a very serious challenge in managing and protecting the resources of the oceans and health of communities of the PNG and Small Island States of the Pacific. These are the very issues negotiated with our EU Partners (through Horizon 2020) in the Pacific region and include:

1. Health, demographic change and wellbeing
2. Food security, sustainable agriculture and forestry, marine, and maritime and inland water research and the bioeconomy
3. Secure, clean and efficient energy
4. Smart Green and integrated transport
5. Climate action, environment, resources efficiency and raw materials
6. Europe in a changing world- inclusive, innovative and reflective societies
7. Secure societies- protecting freedom and security of Europe and its citizen

Given the recent approved UN Sustainable Development Goals and Responsible Sustainable Development policy by PNG (Governance, economic, environment and livelihoods) scenarios and assessments of PNG and its neighbours coupled with too many questions and uncertainties will pose a long Term disaster for small island countries and the health of its people.

Bio: Chalapan Kaluwin is the Head of Environmental Science and Geography. He is also Director of the Centre for Climate Change and Sustainable Development at the School of Natural and Physical Sciences. He has worked for the South Pacific Regional Environment Programme and specializes in Environment and Atmospheric Chemistry, Climate Change and Coastal Climate Change Environment Policy issues.

George Carter

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Pacific Climate Change Coalition Behaviour: formation, leadership and strategies

For fourteen Pacific Islands', political groupings or coalitions in the United Nations Framework Convention on Climate Change (UNFCCC) are integral in their negotiation finesse and very existence in the climate regime. Their behaviour in the regime are not only shaped by the type of coalition they associate themselves with (G77-China, Climate Vulnerable Group, Least Developing Countries, Cartagena Dialogue, and the Alliance of Small Island States), but also the regional processes (informal high level meetings) that allow them to share information and strategies for the formal regime meetings (SBI, SBSTA, ADP and COP). By participating in this strenuous calendar of constant meetings, this paper finds that from participating in formal and informal processes of UNFCCC, unique forms of coalition formation, leadership and strategies occur. This paper is based on a yearlong fieldwork of following Pacific Islands' negotiators in various UNFCCC meetings from Apia-Bonn-Suva-Port-Moresby-New York-Paris; the climate change road to the COPS Paris in 2015.

Bio: George Carter is a PhD Candidate at the State, Society, and Governance in Melanesia, Coral Bell School of Asia Pacific Affairs, in the College of Asia & the Pacific at the Australian National University.

Dr Darren Bito

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Herbivore Assemblages along an altitudinal gradient: Indicators of climate change

This study reviewed several research conducted by our team of researchers within Asia Pacific and Oceania on the topic of herbivore insects and their feeding preference or specificity to selected host trees and shrubs along an altitudinal gradient. The altitudes includes a low at 300 m above sea level(a.s.l.), a mid-elevation at 700 m a.s.l. and altitudes greater than 1100 m a.s.l. within tropical forests of Papua New Guinea and subtropical forests in Southeast Queensland's Lamington National Park. The work attempts to show how a selected ecological process (herbivory) will change with climate over time. The work also compares changes across strata within the forest canopy. The results may have considerable implications in attempting to predict ecological changes

which will accompany predicted global warming. The research has involved intensive field and laboratory study. Extensive samples of larvae were collected from target tree species and bred through to adult-hood in the field. In addition I have estimated leaf loss by tree species, altitude and canopy stratum using image analysis techniques. An associated dimension of the project has looked at the additional interactions with predatory ants. The host specificity of caterpillars, their pressure and damage on trees and shrubs within rainforests has been examined. Changes in levels of herbivory across strata were strongly associated with changes in leaf traits such as leaf thickness and density. Host specificity of herbivores include species, family and supra-family specialists. Species specialists showed a mid-altitudinal peak at 700 m and were dominant at all altitude. Overall species richness and abundance also peaked at the 700 m forest site.

Bio: Darren Bito is the Dean for the School of Science and Technology at the Pacific Adventist University in Papua New Guinea.

Robson Tigona

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Relationship between the Southern Oscillation and rainfall in northern Vanuatu and eastern Solomon Islands

Extreme events in the Southwest Pacific are mostly related to tropical cyclone, drought and floods that have dramatic impacts on socio-economic development and land management for the island countries. Monthly and annual rainfall totals measured at stations at Pekoa and Sola airport on Santo and Vanua Lava Island, respectively in northern Vanuatu, and at Lata airport on Santa Cruz Island in the eastern Solomon Islands. We investigate the relationship between the SOI and the precipitation records, at various leads and lags, to explore the potential for using this large-scale climate index as a monthly to seasonal rainfall prediction tool.

Bio: Robson Tigona is a PhD Candidate in the School of Geography, Earth Science and Environment at the University of the South Pacific. His research project focuses on seasonal rainfall in Vanuatu, Solomon Islands, Fiji and Tonga and its relationship with the El Niño Southern Oscillation (ENSO).

Michael Ha'apio

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Transformation of rural communities as an effective way to building resilience in the Pacific Islands Countries— A case study of Mondo and Keigold villages in the Solomon Islands.

Solomon Islands is one of the countries in the world which is vulnerable to impact of global climate change. It threatens not only people's livelihoods and well-being but also the viability of isolated communities. Realising the gravity of this negative trend and devastating impact will have on the future generations, government in partnership with aid donor partners have invested millions of dollars in climate change engineering programs, through mitigation and adaptation strategies. As form of adaptation, the government invests in programs aimed at increasing the adaptive capacity of the vulnerable communities through landscape and seascape programs across the rural communities. Landscape includes; zoning, conservation of natural resources with effective management and relocation and resettlement which faces obstacles due to land tenure system across the country. This paper describes the findings of a

study involving more than 140 participants from Keigold and Mondo communities, Ranogha Islands, Western province. In this study 80 per cent households realising the severe damage the earth quake has on their livelihoods and properties have decided to relocate from their old village 'Mondo' to their new home 'Keigold'. The study was designed to assist a deeper understanding of community perceptions and responses to the impact of extreme environment events and climate change also take into account the obstacles that residents face from relocating from their original community. The response of these former Mondo villagers in their move to their new home at 'Keigold village' provides valuable lessons. Focussing on the 'transformation concept' as a long-term adaptation strategy and enlargement of climate engineering and ecological resilience concepts, the paper discusses why communities and relevant authorities should focus their endeavours in building resilience at the potential pro-active transformation of rural communities. As the global community continues to encounter the impact of climate change and extreme environment events, much can be learnt from the people of Keigold, Ranogha, Solomon Islands with their own grass-roots rural community transformational conceptual model to adaptation.

Bio: Michael Ha'apio is a Masters student at the Pacific Centre for Environment and Sustainable Development. His research is on the impact of environmental extreme events on selected communities in the Solomon Islands and analysing factors which lead communities taking alternate aversive strategies to cope with these disastrous environmental events.

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Allocating Adaptation Finance of the Green Climate Fund: How the Pacific might fare post 2020.

Accessing climate finance from global public sources is a challenge for Pacific island countries. The Paris Agreement has committed USD 100 billion through the Green Climate Fund (GCF) by 2020. This paper explores the prospects of large scale financial flow to the Pacific post 2020 within the context of the vague GCF allocation criteria. The results suggest that the Pacific as most sensitive to the GCF allocation criteria. Such finding is critical in the light of the GCF readiness program and also contribute to the debate as to whether the Paris Agreement is beneficial for the region or not.

Bio: Jale Samuwai is a PhD Candidate at the Institute of Marine Research at the University of the South Pacific. He has research interests in accounting and climate financing.

Ronald Aknonero

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Chemical composition in the fruit oil of six varieties of Pandanus conoideus (Pandanaceae) based on traditional classification system

The Genus Pandanus is wide spread in the tropics and often grows in different soil conditions. It is a complex plant with over 600 species around the world over and also common in the island of New Guinea. Pandanus conoideus is one of the many species locally known as 'marita' in Papua New Guinea pidgin while the

'Yuwei' dialect of the Jimi people is called 'kombo'. The aim of the study was to document traditional knowledge systems on the classification and nomenclature of marita from locals of Kaul village in Jimi District, Jiwaka Province. Ethnological information's were obtained from selected elderly individuals using unstructured interview with open ended questions. Based on traditional knowledge, 20 different varieties of marita were identified and samples of 6 of these were collected at this time because of its fruiting season in that area. The oil contents in the fruits of the six varieties were extracted in n-hexane using solvent extraction method. The oil extraction procedure was done in accordance with the traditional preparation methods of steam cooking the fruits before extraction of their oil and compared with the oil yield obtained through solvent extraction of the raw samples. The Jimi people use marita oil extracts as food additive, a variety of social obligations, medicinal use, body decorations and are also preserved for later use. The traditional classification and naming of marita varieties were noted to be based on morphology, size, length and oil contents, with the names defining the ethnotaxonomic nomenclature. Comparison of the percentage oil yield in the six different varieties of *P. conoideus* showed the oil contents in the steam and raw extracts respectively as; Kombo alla (15.34 %, 15.86 %), Kombo andba (14.68 %, 11.25 %), Kombo kulang (11.43 %, 12.99 %), Kombo nomung (6.9 %, 10.53 %), Kombo andamung (5.71%, 7.44%) and Kombo wurrum (3.4 %, 4.68 %). The analysis of the fatty acid composition in the oil and other physico-chemical parameters are ongoing and the results will be presented.

Bio: Ronald Aknonero is a Master of Science student in the School of Science and Technology, and is a part time chemistry tutor. His research focuses on the ethnological documentation and nutritional profile of native pandanus in Papua New Guinea.

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Assessment of growth, yield and nutritional performances of soybean (*Glycine max* (L.) Merr.) under organic and inorganic nutritional treatments at the dry-lowland Central Province of Papua New Guinea

This study was conducted to assess the growth, yield and nutritional performances of soybean in the dry lowland conditions of Papua New Guinea (PNG). Experiments were carried out on a field approximately 50 m above sea level (atmospheric pressure: 1003.3mb), with an average monthly temperature of 28.7°C, rainfall 4 mm, humidity 81%, and wind speed 1.89 mph. One soybean variety commonly grown in the country's higher altitudes (1500-1700 m a.s.l.) was used. The soybean variety was grown under different plant nutritional treatments including: organic treatment (animal manure), inorganic treatment (NPK & diammonium phosphate), mixed treatment (animal manure, NPK & diammonium phosphate) and a control treatment (no fertilizer). The effects of the various soil treatments were observed on the growth parameters and nutritional parameters. The growth parameters included vegetative structures such plant height, number of node & branches and canopy spread. Reproductive growth parameters include timing of initial flower appearance and ripening of the soybean pods. The yield parameters include the number of soybean pods per plant, the number of seeds per pods and the mass of a total of 100 seeds. The nutritional parameters include the oils, fats, protein and mineral content of 10 grams of soybean seeds. A total of 160 soybean plants were used in measuring both growth and yield parameters. Vegetative growth parameters (plant height, number of nodes & branches and canopy spread) were measured in day number 14, 28, 42 and 56 after sowing (i.e. day after sowing abbreviated as: DAS). At 56 DAS the average growth parameters ranged from 57.8 cm to 63.1 cm in plant heights, 20.0 to 20.2 number of nodes, 7.7 to 8.0 number of branches and 76.4 cm to 82.5 cm canopy spread across all treatments. The average number of days taken for soybean plants to flower ranged from 42.2 to 43.7 and 94.8 to 99.2 to reach maturity observed under all treatments. In yield across all treatments the pod number per plant ranged from 308 to 343 and 17.9 grams to 19.6 grams mass of 100

seeds while seeds per pod were recorded at average ranging from 2.5 to 2.6. The nutritional contents have yet to be finalised in the National Agricultural Research Institute Chemistry laboratory in Port Moresby, PNG.

Bio: Pakop Sovo is based at the School of Science and Technology. He has research interests in Environmental Science, Agricultural Plant Science and Plant Fertilization.

Dr Rado Faletić

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Horizon 2020 – the largest research funding program in the world

Horizon 2020 is an enormous funding program that supports all subject areas of research and innovation. It provides a huge range of opportunities, from career development, to project funding, to innovation support, and most of all for international engagement. This presentation will give an introduction to the different areas of Horizon 2020 (individual fellowships, project grants, etc.), and strategies and hints for Pacific Island researchers to become involved.

Bio: Rado Faletić is Director of Projects and Communications at Montroix Pty Ltd. His professional career has included teaching and academic positions at the Australian National University. His other research projects have included the spatial modelling of water flows in de-forested landscapes, and adaptive seismic tomography.

Ronald Aknonero

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The discovery of bioactive compounds from indigenous species of mushrooms through ethnomycological leads

Traditional knowledge systems relating to the use and appreciation of macrofungi (mushrooms) as food, medicine and others have not been documented in Papua New Guinea. Our study towards documenting that wealth of knowledge and to further appreciate the ethnotaxonomic nomenclatures in the traditional mushroom knowledge has led us into understanding the intrinsic relationship between the peoples and the local environments. Further search to correlate the traditional uses of mushrooms as food and medicines to their respective chemical constituents lead us to the isolation and identification of interesting molecular structures with interesting biological activities, thus confirming the traditional uses. In this presentation, the ethnomycological nomenclatures of mushrooms will be presented, including the story behind the isolation, identification and screening of chemical compounds found in mushrooms of PNG.

Bio: Ronald Aknonero is a Master of Science student in the School of Science and Technology, and is a part time chemistry tutor. His research focuses on the ethnological documentation and nutritional profile of native pandanus in Papua New Guinea.

Dr Serena Heckler

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UNESCO Office for the Pacific States

UNESCO, the United Nations Educational, Scientific and Cultural Organization, has a Science, Technology and Innovation (ST&I) Programme that supports countries to develop or improve their ST&I policies, build capacity in STI policy and governance and raise awareness about the importance of ST&I for meeting complex global challenges. Among other activities in the Pacific, UNESCO carried out a review of science policy in the Pacific Islands in 2012 and participated in the early stages of conceiving of and forming PIURN, which was originally established with the “purpose of enhancing Pacific research and development collaboration in ST&I in order to better serve the needs and aspirations of the peoples of the Pacific. [PIURN] also agreed to seek prominent inclusion of ST&I in the updated Pacific Plan and to advance the development of a regional ST&I policy framework.” (PIURN submission to Pacific Plan Review Team). This presentation will review some of UNESCO’s activities with a view to stimulating a conversation about how that work can continue and what the current needs are for PIURN and for ST&I policy in the Pacific.

Bio: Serena Heckler is the Programme Specialist for Natural Sciences at the UNESCO Office for the Pacific States in Apia. Her presentation will review some of UNESCO’s activities with a view to stimulating a conversation about how that work can continue and what the current needs are for PIURN and for ST&I policy in the Pacific.

Prof. Basil Marasinghe

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Can scientific achievements of ancient Melanesians motivate students to learn Chemistry?

For more than 50,000 years of Papua New Guinea’s human history, Papua New Guineans have been making significant contributions to Science, particularly in the fields of Chemistry and Medicine. About 10 years ago, this author was asked by the Department of Education in PNG, to prepare a new syllabus for Grade 11 and 12 Chemistry and he was able to introduce topics covering Ethnochemistry and Ethnomedicine to Upper Secondary Curriculum. This paper summarizes some of the contributions to chemistry and medicine by ancient Papua New Guineans and a study conducted to find out if learning Ethnochemistry and Ethnochemistry has had any effect in motivating students to learn chemistry.

Bio: Basil Marasinghe is the Pro-Vice Chancellor (Academic) at the Solomon Islands National University.

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Ethnological Documentation and the chemistry of eight native Pandanus julianetti (Pandanaaceae) varieties from Kere village, Sinasina District, Papua New Guinea

Ethnological knowledge of native food crops in Papua New Guinea communities can provide vital historical information on cultural anthropology at the macroscopic level, and deliver coloration concepts with science in relation to its traditional naming system of native food crops. Such indigenous knowledge can guide science in analyzing nutrients composition and medical properties of native food crops at the microscopic level. Many native crops are also of cultural importance and are distinctively valued from one community to another. Previous studies on nuts in PNG were based on identifying different varieties, agricultural practices and policies. Not much have been done on the chemistry of nuts. The aims of the research were to document indigenous knowledge on the edible Pandanus nuts based on traditional classification system and assess the nutritional values. Pandanus is a wide spread plant across the island of New Guinea. Two common edible species are Pandanus brosimos (wild species) and Pandanus julianetti (cultivated species). Ten variety of P. julianetti based on traditional classification system were documented for the Kere tribe in Simbu Province using unstructured open-ended question and group interview with the local community. Amil (karuka in pidgin) is the general name for P. julianetti in the Kere language. Samples from eight varieties of P. julianetti nuts were collected based on traditional naming and classification systems and their oils obtained using the soxhlet extraction method. The oil yield of the eight varieties were; Amil dimin (51.74 %), Amil pawa gelwa (51.13 %), Amil elebe (49.26 %), Amil dimin elebe muge (41.04 %), Amil boga kulame (57.14 %), Amil elebe pawa (47.44 %), Amil elme (54.74 %), and Amil miamil (45.90 %). The analysis of the fatty acids, amino acids and other physico-chemical parameters are in progress and will be presented.

Bio: Ronald Aknonero is a Master of Science student in the School of Science and Technology, and is a part time chemistry tutor. His research focuses on the ethnological documentation and nutritional profile of native pandanus in Papua New Guinea.

Hebo Oika
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Impact of land development to the Motu Koitabu People in Papua New Guinea

Land development in recent years appears to have an adverse effect on the traditional mind set and behaviour of Motu Koitabuan villages in Port Moresby of Papua New Guinea. New generation has been more affected than their older counterparts. Impact of land development is more pronounced in the customary practices in family homes, attendance in school, bride price rituals, marital practices and promiscuity of young people. This paper discusses a study carried out to assess the impact of land development in social aspects of Motu Koitabuan people.

Mose Mose & Tara Patu

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National University of Samoa

Evaluation of the use of the Aptus within an educational context at NUS.

One of the key issues hindering the full realization of the potential benefits of ICT is the issue of access and affordability. Of particular challenge is access to the Internet which potentially provides a wealth of quality resources to facilitate and improve the teaching and learning process (Chan Mow 2010; PRIF 2015; Vaa 2015). One innovative solution for such challenges is a recent innovation launched by the Commonwealth of Learning in 2014 (www.col.org/aptus). The aptus also referred to as “classroom without walls” is a device set which allows access to digital or electronic resources in the absence of electricity or the internet (Ghosh 2013). This presentation describes work in progress and reports on the findings from the initial trials at the National University of Samoa on the use of the aptus and explores the feasibility of using the aptus within the context of the National University of Samoa (NUS) and schools in Samoa to provide and improve access to e-resources. The initiative is a collaborative effort by NUS, Commonwealth of Learning (COL) and the Ministry of Education Sports and Culture (MESC) to provide innovative low cost solutions to chronic teacher shortages, limited access to computers as well as provisioning of offline access to e-resources. COL contributed 15 sets of the aptus and MESC provided transport and access to schools for the trial. The aptus is currently being trialed at NUS and at a later date at selected schools in urban Apia. Evaluation through a questionnaire administered to both students and teachers has yielded both qualitative and quantitative data on ease of use and usefulness of the aptus within the context of providing access to electronic resources.

Bio: Mose Mose and Tara Patu are both Lecturers in the Department of Computing at the National University of Samoa.

Anji Naidu

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University of the South Pacific

Role of ICT in meeting societal challenges: A Case Study of Youth Champ for Mental Health in Fiji

One of the major challenges facing mental health service development and delivery in Fiji includes the stigma associated with mental health. Many patients fear the reactions from loved ones and therefore hesitate to physically visit a mental health facility. Youth Champs for Mental Health is a registered NGO committed to advocating and promoting mental health issues through creative means in Fiji. A large number of cases approach the group through social media sites. ICT plays an important role as people want to retain their anonymity therefore requesting counsellors to talk through phone calls or have discussions via social networking sites.

Bio: Anji Naidu is a Master of Commerce student in the School of Economics at the University of the South Pacific.

Assoc. Prof. Muagututi'a Ioana Chan Mow & Assoc. Prof. Bibhya Sharma

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PacenetPlus Project Working Group on Pacific STI Roadmap

This presentation is aimed at raising awareness and to lobby support for a Pacific Science Technology Innovation (STI) Roadmap. A valuable outcome of the PACENETPlus project the Pacific STI Roadmap is a set of recommendations which is the product and culmination of findings from baseline surveys, research, seed fund initiatives, extensive consultations at the various project platforms of PACENETPlus – a 3 year project aimed at promoting bi-regional cooperation between the Pacific and Europe in the area of STI. The importance of this STI roadmap is many fold but attempts to provide strategies and mechanisms to achieve Sustainable development goals (SDGs) as well as addressing societal challenges in the Pacific region.

Bio: Ioana Chan Mow is Associate Professor of Computing and Computing Education at the National University of Samoa. Bibhya Sharma is Associate Professor in the Faculty of Science, Technology & Environment at the University of the South Pacific.

Titimanu Simi

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Ministry of Natural Resources and Environment, Samoa

Risk mapping and modelling tool in the Pacific

There is need in the Pacific and globally to use risk-based information to support hazard/risk related decision-making within the development context. Further, the availability of the multiple hazards impact and loss modelling tool, RiskScape, developed according to New Zealand conditions, provides an opportunity for Pacific Islands' disaster and planning agencies to help achieve these goals. PARTneR (Pacific Risk Tool for Resilience) aims to tailor and implement the RiskScape tool for the Samoa and Vanuatu hazard and risk contexts. In order to enable relevant agencies and stakeholders to effectively develop and use risk-based information to support development decision-making (e.g. land use and development consent planning). In this talk we provide a review of risk tool challenges and opportunities, overview of the planned pilot phases of PARTneR in Samoa and Vanuatu over the next three years, including longer-term plans to support, risk related decision processes in nations throughout the wider Pacific. In addition we present the preliminary findings from phase 1 of PARTneR: stakeholder workshops that identify data and risk tool needs. We will conclude by outlining key recommendations from this phase and wider learning from the RiskScape tool implementation in New Zealand.

Bio: Titimanu Simi is a Senior Disaster Risk Reduction Officer at the Ministry of Natural Resources and Environment in Samoa

Dr Cresantia Frances Koya Vaka'uta
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Cultural Heritage & Sustainability: Reflections on the role of Pacific Universities in Safeguarding & Revitalizing Heritage Arts and Languages
 Indigenous knowledge, including heritage arts and languages, has, for the most part, remained on the margins of educational and national development discourse in the Pacific (Thaman, 2012; Dei, 2002). Whereas the 'developed' world has long recognized the value and benefit, (both socio-cultural and economic) of the creative industries and cultural economy, Pacific island nations have only recently begun this conversation albeit with a primary focus on economic development. Likewise, while international research on the significant role of indigenous knowledge systems including languages or mother tongue on foreign language acquisition, critical thinking and academic performance, in the Pacific islands, indigenous languages continue to be marginalised in educational planning including curriculum development. This paper is in three main parts: the first explores the globalized context of Pacific development, education and research; the second discusses the role of Pacific heritage arts in development in general and educational for sustainable development in particular; and the third considers the potential role of Pacific Universities in helping to foster Pacific indigenous knowledge systems and languages to frame national and regional discourses within the broader sustainable development agenda.

Bio: Cresantia (Frances) Koya Vaka'uta is a senior lecturer in Education at the University of the South Pacific. She teaches in the areas of curriculum development and design, education in small-island developing states, culture/multiculturalism in education, and Pacific arts in education. Her research interests include Pacific island education, Pacific Island Arts, Art as a social learning tool; Protest Poetry, Pacific Research and Evaluation, Pacific indigenous research methodologies and Education for Sustainability in the islands.

Prof. Silafau Sina Va'ai
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Pacific Literatures in English in the 21st Century: From 'Sons for the Return Home' to 'Lineages' and 'Our Heritage, The Ocean'

Since the 1970's, Pacific literatures in English have raised the profile of creative writers from Oceania as they gave voice to stories of identity and development in the contemporary post-colonial era. Bedrock cultural values of ancient forefathers emerged to collide with aspirations to modernity evident in narratives of change, denoting challenges to notions of indigeneity and place. In the new millennium, Pacific writers have continued to interrogate crucial issues of sustainability and survival, tickling the intellect and creative imagination. This paper with examine three creative pieces from Pacific writers to highlight significant features on this literary journey of linguistic empowerment.

Bio: Sina Va'ai is a Professor of English in the Faculty of Arts at the National University of Samoa, and has published her creative writing throughout the Pacific region.

Waisale Ramoce

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“Talanoo – Dissecting the Narratives” – a post traumatic tool

The People of the Pacific are susceptible to natural disasters and their impacts can be felt at both macro and micro levels of societies. This paper examines *Talanoo*, a widely available and acceptable tool in the Pacific that is often dismissed, shallowly written off, and a sidetracked cultural nuance. Though the paper may be a far flung from offering solutions to post traumatic experiences, however, it aims to give *Talanoo*, its rightful place and space as not only a cultural means for communication, and research but one of the best tools that Pacific Islanders can be engaged with in immediate post traumatic situations. *Talanoo* is more than what it is often taken for. It is about creating open spaces; it’s about leveling platforms, in colloquial expressions it’s about “offloading” and not surprisingly “gossiping”. Taking all these into considerations, it also aims at exploring the nature and the value of the narratives out of which Talanoa situates itself. It argues that clear, concise and a more focused approach needs to be considered to the narratives during *Talanoo*, for in the narratives, lie emotions, feelings, attitudes, and the “self”.

Bio: Waisale Ramoce is a Teaching Assistant at the Oceania Centre for Arts, Culture and Pacific Studies. He is also a staff member in the Faculty of Arts, Law and Education at the University of the South Pacific.

Amituanai Vernetta Heem & Prof. Silafau Sina Vaai

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National University of Samoa

The Challenges to Proficiency in English in Samoa: Innovations and Strategies for Foundation Students at NUS.

The challenges to proficiency and competencies in English of students for whom English is a second language are many and varied. Students in the Pacific Region are no exception despite the long history of colonization and the current pressures of globalization especially with internet and mobile technology. This paper will focus on recent curriculum innovations and teaching strategies for first year students at the National University of Samoa to address the declining competency levels in this international language of learning which has important consequences for students’ progress at the tertiary level.

Bio: Amituanai Vernetta Heem is the Head of Department for the Department of English and Foreign Languages. Sina Va'ai is a Professor of English in the Faculty of Arts at the National University of Samoa, and has published her creative writing throughout the Pacific region.

Prof. Bernard Rigo

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University of New Caledonia

Gift Mana and Tapu in Eastern Polynesia

The term of "gift" is a key concept in anthropology. The polynésianistes use this term but they also borrow local concepts of mana and tapu which also get a great success in the social sciences. This contribution will be based on the example of eastern Polynesia to re-examine the concept of gift in the lighting of the local concepts.

Prof. Serge Tcherkezoff

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EHESS Ecole des Hautes Etudes en Sciences Sociales & Australia National University

Gift Giving in Western Polynesia (the Samoa-Tonga case)

The anthropology of gift giving in Western Polynesia has long held that the Samoan and the Tongan case are not only different but entirely contradictory, in the sense that, at the lexical level, one system reverses the other: where Samoan 'oloa are the secondary and counterpart in pigs, food and objects to the gift of fine mats toga, the Tongan koloa are the main gift. But Koloa are ceremonial cloth, reciprocated by pigs, foods objects. Hence two queries: is the similarity in kind of the objects exchanged (cloth / food and bjects) a local (West Pol.) or a trans-polynesian model? But if there is a recurrent parttern in kind, whether at the local (west pol) or whole pol level, how can we explain the apparent reversal that occurred in the designation of the categories of gifts?

Bio: Serge Tcherkezoff is a researcher in Pacific anthropology and ethno-history. He is a specialist of Samoan society in Europe, and is one of the two specialists in Europe, of ethno-historical approaches to the encounters between Polynesians and Europeans in the 18th century.

Assoc. Prof. Patrice Godin

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Gift Giving in a Kanak Community (Hyeehen)

A hyeehen saying tells us that « exchanges are the breath of the custom." Borrowed from the ritual speech, the statement refers primarily to the fact that before colonization the custom was a kind of cosmology in action. The exchanges were participating of a life cycle unfolding at the level of the universe as a whole. But beyond this truth - that the time has not completely eradicated - this saying is also significant of the centrality of exchanges in the contemporary

history of the Kanak communities of the region of Hienghène. It is by exchanges that these communities have faced the constraints of colonization and is still by them that they manage their own capacity to social change

Dr Akatsuki Takahashi

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UNESCO Cultural Diversity Convention and Pacific Indigenous Art Form and Languages in the 21st Century

This paper aims to introduce the UNESCO Convention on the Protection and Promotion of the Diversity of Cultural Expressions. This Convention is an international agreement that ensures artists, cultural professionals, practitioners and citizens worldwide can create, produce, disseminate and enjoy a broad range of cultural goods, services and activities, including their own. The paper provides information on historical background, objectives, guiding principles, definition of key words, governance and international cooperation mechanisms of the Convention. By providing best practice in the Pacific, the paper aims to illustrate the benefits and the impact of the Cultural Diversity Convention in order to support cultural and creative industries and sustainable development.

Bio: Akatsuki Takahashi is the Programme Specialist for Culture at the UNESCO Office for the Pacific States in Apia.

Prof. Letuimanu'asina Kruse Va'ai

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Prescriptions and descriptions for the 21st century: a synopsis of change and adaptations of language in Samoa

The use of language in different domains in Samoa signifies a continual cross cultural discourse between pre colonial and post colonial, between traditional and modern and between foreign and local. This paper will discuss how language change as social action or within the context of other social actions entails a study of people and how they operate linguistically to convey their messages and to be understood. It will also describe how and why it is part of a balancing act performed by Samoan society with its seemingly strong social structures on one hand and vulnerability in a world environment on the other.

Bio: Emma Kruse Va'ai is Professor of English and Linguistics in the Department of Teacher Education. She is an educator and a published poet and writer.

John Patu
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Sustaining Language Transmission Efforts through Dual Language Immersion and Bilingualism in the Homeland and Diaspora

The sustainability of Samoan language diasporas are quite varied and in the case of Hawai'i face numerous challenges. The instruction of Samoan in Hawai'i is very limited: there are only two schools that offer formal instruction at the secondary level and two at the tertiary level. There is only one extracurricular language school that meets weekly and after almost a century of settlement in Hawai'i and the establishment of numerous Samoan churches, Samoans have not yet produced immersion schools to suit the needs of its youth. Language and cultural transmission become limited as Samoans in diaspora face identity issues and become consumed within the socioeconomic problems associated with migration and settlement in largely individualistic and capitalistic settler-states. Limited funding from the federal governments in various diasporic communities, as well as local initiatives, provide challenges to the sustainability of the *fa'asāmoa* in various contexts. The population shifts from the two Samoas to the diasporas in the United States, New Zealand, and Australia reveals that most of the Samoan population no longer lives in the homeland. The challenges of language transmission requires that the 'homeland' – the two government entities, Sāmoa and American Sāmoa – invests not only in educational and economic opportunities but in outreach, logistical, and financial support to Samoan communities abroad. Sāmoa must view itself as extending beyond the state – that the nation has been expanded beyond territorial borders. Coupled with the effects of climate change and the shift from a fixed homeland to mobile diasporic communities, Samoans must claim responsibility for language maintenance and sustainability both within and outside of the two Samoas.

Bio: John Patu teaches in the Department of Indo-Pacific Languages and Literatures at the University of Hawai'i at Manoa.

Fonomaaitu Tuvalu Fuimaono
 Ara Institute of Canterbury

My Samoan Language and Me

The paper discusses the important relationship between the Samoan language and the identity of the Samoan person. It will mention the threats of losing the Samoan language in NZ based on the statistical findings. It will also explore what is currently being done in NZ to support the Samoan language by highlighting the roles of the Aoga Amata (preschool), schools, tertiary institutions and the Samoan traditionalist Churches. The author then discusses his views on the preservation of Samoan language in NZ and suggest a conceptual framework of "Fausiga o le Faitelele" as a model that could support that preservation. Derived from that conceptual framework is the importance of capturing the knowledge of Samoan culture and language from our elders and how this has helped the author in his journey as a young matai. The conclusion will discuss the importance of teaching the language to the next generation of Samoan young people who are living in NZ and are not only Samoans but are of other ethnic groups.

Bio: Fonomaaitu Tuvalu Fuimaono is a student at the Ara Institute of Canterbury in New Zealand.

Dr Peni Fukofuka
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Translating Accounting in the Pacific Islands

Accounting regulations and reports involve technical terms which are described, constructed and communicated in formal written English. However, English is not the first language for many Pacific Islanders. Therefore it is interesting to study how accounting practitioners and auditors operationalise technical terms when interacting with stakeholders. Evidence from language studies indicates that full equivalence of translation between languages is rare. Accordingly, this study examines how technical accounting terms are interpreted and acted upon in PICs. This study contributes to broader debates regarding the relevance of IFRS and challenges associated with implementing them in PICs. It also has practical implications for the education and training of accounting practitioners as well as users of financial reports

Bio: Peni Fukofuka is a Lecturer at the School of Accounting and Finance.

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Cash Payouts – is it contributing to social justice?

This paper discusses whether it is possible to measure the extent to which one of the attributes towards ADB's social protection Index, Cash Payouts, contributes to Social Justice. One exceptional Regional Development Policy is the ADB's social protection Index which is a tool that summarizes the extent of social protection in the countries, giving ADB and the developing member countries (DMCs) better quantitative and qualitative information on social protection activities and an internationally comparable database of social protection expenditures, coverage, distribution, and impact. Cash payouts have been proven as effective at meeting basic needs, while empowering recipients to make choices based on their own requirements. Cash has also been shown to stimulate markets and boost local economies, thus having a greater effect on the wider community than food distributions. Measuring this market impact, and relating this to the potential for cash transfers to reduce poverty and inequality in Samoa, is the focus of this paper.

The paper draws on research findings including quantitative analysis and interviews and focus groups held in the targeted communities to discuss the extent to which cash transfers can be considered to reduce levels of poverty and socio-economic inequalities, within the targeted region and between regions. Results show that it is predominantly local rather than external traders and producers that are benefiting from use of cash transfers. This reduction of income inequality between local traders and producers (many of whom are only marginally better off than the very poorest) and those in other regions demonstrates a positive impact of cash transfers relative to food aid. While there is insufficient evidence to prove that cash transfers led to sustained economic growth for the region, it is possible that cash transfers can increase inequalities within communities. For example, focus group discussions found that while it was a cultural norm to share food with neighbour, the same didn't apply for cash. Poor households receiving cash are likely to benefit more than non-recipients, whereas community coping mechanisms and social norms would ensure more equitable distribution of food to families.

Bio: Auapaa Sasa Walter is a Senior Lecturer in the Department of Management, Tourism and Hospitality.

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Influence of culture in advancing social innovation

Research investigating social enterprises in the Pacific is underdeveloped. As methods of advancing social innovation and social entrepreneurship, social enterprises offer new ways of organizing communities to create and deliver social change in developing and developed countries. Using a sociological institutional approach, this paper analyses experiences and challenges that social enterprises in Kiribati and Fiji faced when delivering goods and services that create social value to an underprivileged population. Based on the interviews conducted with Kiribati and Fijian social enterprises, the study finds culture as a common denominator but unstable element of the institutional ecosystem of social enterprises. We discuss implications for practice and policy and make recommendations to increase the enterprises' legitimacy of purpose by integrating cultural and market practices.

Bio: Buriata Tofinga is a PhD Candidate in the School of Management and Public Administration.

René Zimmer

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The Kaugages as actors of a prolific sustainable artistic current in Papua New Guinea

The Kaugage clan stands for a successful artistic institution in Port Moresby. These Simbu people started painting in Port Moresby following the great Mathias Kaugage from the 70's till now, settling across international hotels to sell their works. The clan's dozen members have been exhibiting and selling their works for more than forty years with constancy, endurance and creativity. To survive and occasionally thrive, the clan uses some devices. They make their own paint when necessary, they may use ticking, sail or Hessian when short of canvas and stick together in case of trouble. They never had a show room and their art center is the Holiday Inn sidewalk where they have learnt their job from their kin in an internal process. Although their paintings often represent the past, they also lead the way to social and cultural awareness. They are contemporary artists dealing with tales and stories, identity signs and citizenship, woman and the gender issue, war and love, who never miss an opportunity to comment on national or international issues, urban planning, lifestyles, transport, sources of energy, and technologies. My presentation will show how these keen observers of the social changes and patterns pursuing a common ideal actually expose crucial issues, confronting everyman with reality in their rapidly changing environment and how they have managed to keep going, constantly adjusting, making the most of the opportunity to expand their business against all odds.

Bio: René Zimmer is a Senior Lecturer in English and Anglo-Saxon Literatures and languages.

Suzie Bearune & Stephanie Geneix-Rabault

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***Eralo!* Lullabies, nursery lore, children's folklore and kanak languages Contemporary and Comparative Approaches**

Traditional knowledge of kanak languages, such as lullabies, nursery lore and children's folklore, or songs, music, poems and history, were all constituted a form of traditional art. These oral traditions have been passed on orally from generation to generation since a very long time for a part of them. There is always a person who knows them and who has transmitted them to the new generation. At the same time, there is always someone who creates new oral songs, music, histories, or news words and expressions. Once contact with European people began, writing systems in kanak languages was introduced in the country. The establishment of orthography systems was mainly associated with the missionaries (London Missionary Society), who considered translation of religious literature and literacy of the local populations to be essential steps in their program to convert the local people to Christianity. The introduction of a writing system did not immediately influence the oral traditions or the kanak languages, but it is clear that it was a major factor in eventually impacting their evolution in a new way. But at the same time, it reflects a natural progression of those systems (languages and oral traditions).

Bio: Suzie Bearune is a Senior lecturer in Oceanic linguistic. Stephanie Geneix-Rabault is a Senior lecturer in the Oceanic languages and cultures programme.

Leua Latai & Dr Lex Mcdonald

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Expressive Arts as a Therapeutic Intervention: a Samoan case study

Expressive arts has been used for therapeutic purposes for centuries and today therapists use the arts to heal a range of recognised psychological problems. Many of the current commentaries and research reports have been concerned with children and adolescents who have been traumatised. However, there is minimal robust research and investigations of the efficacy of impacts and detailed descriptions of programmes are needed. In this case study a Samoan 'art as therapy' programme is briefly outlined describing the activities developed in a school district to assist 177 children traumatised by a tsunami in 2009. Research was concurrently undertaken to monitor the outputs of the expressive arts and the students' responses to the intervention. Using different modes of the arts, the children displayed their sorrow, disbelief and anguish at first and then, as the programme developed, a noticeable improvement in mood was detected. Most of the children indicated that it was a useful programme for them and sought additional similar experiences. The implications, recommendations and limits of the research are discussed.

Bio: Leua Latai is a Senior Lecturer in the Faculty of Arts and Lex Mcdonald is a Senior Lecturer in the School of Education.

Prof. Serge Tcherkezoff
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EHESS Ecole des Hautes Etudes en Sciences Sociales & Australia National University

The Samoan Village as a 'Community' nuu, the Rule of Exogamy and the Brother-Sister Relationship

How are we to understand that there is a strong rejection of intra-village marriage in Samoa. This rejection is surprising since the families aiga that make up a village nuu are generally far from 'related' aiga, at least closely enough to forbid any intermarriage on a kinship basis. We get a better understanding once we uncover that, at a certain encompassing level of representations of what is a nuu, all villagers are quasi "brother or sister" to each other. This brother-sister overarching link becomes evident if we analyse the composition of the village, not just as a reunion of families but first of all as made up by three ceremonial groupings that include everyone and that are also called nuu.

Bio: Serge Tcherkezoff is a researcher in Pacific anthropology and ethno-history. He is a specialist of Samoan society in Europe, and is one of the two specialists in Europe, of ethno-historical approaches to the encounters between Polynesians and Europeans in the 18th century.

Latu Latai

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Changing Covenants in Samoa? From Brothers and Sisters to Husbands and Wives?

This article explores how in the process of Christian conversion in Samoa by the London Missionary Society (LMS) the indigenous sacred covenant between brother and sister was transposed onto the relation between the pastor, his wife and the congregation. I consider how far Victorian models of gender and domesticity, based on more individuated modes of personhood and the nuclear family, were promoted by foreign missionaries and whether Samoan people accepted, resisted and transformed these models. In Samoa, women had assumed powerful roles as *feagaiga* 'covenants' and as *tamasa* 'sacred child'. These ascriptions demonstrate the expansive and relational nature of personhood in Samoa which also gave Samoan women highly esteemed and sacred status in their families and natal villages. What impact would Christian conversion have on this status of Samoan women?

Bio: Reverend Latu Latai is a PhD Candidate in Pacific Studies in the School of Culture History and Language, College of Asia and Pacific.

Fiu Mataese Elisara

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Ole Siosiomaga Society Inc (OLSSC), Samoa

The Evolving Principles and Practices in Customary Land Tenure Systems in the Pacific in the Context of Development Pressures and Climate Change

The presenter recognizes the immensity of the complex topic and attempts to try and present it from the standpoint of its three components - sustainable development, climate change, and customary lands. Throughout the keynote, the underlying focus is to address these areas more from a people centered perspective and a rights-based approach. The major discourse the keynote addresses points to developed countries' calculated 'failure' to commit on promises for durable and genuine partnerships exploiting global negotiation processes in the last 25 years to co-opt developing countries to accept their sustained economic growth agenda resulting in social ecological, and rights challenges today.

First, a critique of the concept of 'sustainable development' that was globally endorsed in the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro 1992 arguing that whilst this still holds the answers to many contemporary problems today, the pursuit by the rich for sustained economic growth instead has generated social injustices, ecological devastation, rights violation, and undermine cultural diversity as a specific priority of Pacific countries. Second, in terms of climate change, the keynote approaches it from a climate justice perspective and argues that despite the clear science on urgency to curb climate change the rich countries continue to ignore this and manipulate the decisions of the Conference of the Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC) to protect their economic interests generating false climate mitigation 'solutions' that are tantamount to ensuring climate chaos.

Finally the keynote turns to the focus area on principles and practices of customary lands. Pacific Peoples themselves are allowed to 'speak' truth to manipulative development powers and proponents of climate injustices defending inherent positions of solid, non-negotiable, and unwavering understanding about what these principles and practices represent, what customary lands mean for them as peoples and indigenous communities, sending clear warning messages to those driving them. The keynote also point to specific culprits and evidence of direct violation of policies and procedures by the same donors and institutions implicated. The keynote calls on PIURN members to become effective agents of transformative change championing adequate and effective response to challenges that have failed sustainable development, generate climate injustices, and co-opting Pacific governments to be accessories in their pursuit for sustained economic growth targeting customary lands as a convenient means to realize their exploitative goals.

Bio: Fiu Mataese Elisara is a chief from Sili in Savai'i. He is the Executive Director of Ole Siosiomaga Society Incorporated (OLSSI) and Vice-President of Samoa Umbrella of NGOs (SUNGO).

Prof. Catherine Ris

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University of New Caledonia

Is Inequality Harmful for Development?

The question of how inequality is generated and how it reproduces over time has been a major concern for decades. The relationship between inequality and the process of economic development is far from being well understood. In market economies, it is established that inequality is good for incentives and therefore good for growth, even though incentive and growth considerations might be traded off against equity. However, when growth is looked at over the long term, the trade-off between efficiency and equality may not exist anymore. In fact equality appears to be an important ingredient in promoting and sustaining growth. Many arguments have been provided to explain why inequality might be destructive to inclusive growth, defined as economic growth with equality of opportunity; namely: dissaving and unproductive investment by the rich, political rejection by the masses, poor people's lack of access to financial services, which gives them fewer opportunities to invest in education and entrepreneurial activity. Beyond the risk that inequality may amplify the potential for financial crisis, it may also bring political instability, which discourages investment. Inequality may make it harder for governments to make difficult but necessary choices in the face of shocks, such as raising taxes.

The first part of this paper is concerned with providing theoretical insights on the effects of inequality on economic development. The second part will look at the trend of economic development and inequality in the Pacific over the last two decades. Despite Pacific's remarkable economic progress over the last decades, inequality remains a significant issue in the region. In the third part of the paper, we will analyze the role of public policies in improving equality, might it be through redistribution, better targeted subsidies or better access to health and education services. Countries may find that improving equality may also improve efficiency, understood as more sustainable long-run growth. A special attention is paid to New Caledonia, who enjoys a high level of standard of living but is marked by huge social inequalities as a result of geographic and ethnic origin. In response to these inequalities, the government introduced policies intended to reduce the gap between ethnic groups in the early 1990s. Indeed, substantial social and economic policies favoring Kanak have accompanied the Accord de Noumea and, before that, the Accords de Matignon (signed in 1988). Efforts have been made in all economic and social fields to allow the two provinces of North and Loyalty Islands, mainly Kanak, to 'catch up' with the far wealthier and mostly non-Kanak Southern Province. Despite its importance in political discourse, the disparity issue has never been accompanied by precise measures of the current situation. With regards to education and employment, which have desirable distributional effects, enhance social cohesion and improve growth, the situation remained almost unknown until recently. However, policy debates on reducing inequalities between indigenous and non-indigenous Caledonians require specific analysis and thus would benefit from a better understanding of the factors that affect education outcomes.

Bio: Catherine Ris is the Director of the Centre for Economics and Law (LARJE) at the University of New Caledonia.

Dr Christine Bidaud-Garon

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Integration of Kanak Custom in the Contemporary Normative Corpus in New Caledonia

The Noumea Accord of 5 May 1998 has set up a progressive transfer system of competencies from France to New Caledonia. The final stage of this transfer of competencies is ongoing and should be completed in 2018. Nearly all of the private law (civil law, commercial law, civil procedure, labour law...) is now local legislative power. Even if New Caledonia is still a part of France, it evolved into more autonomy and can now enact its own "civil constitution" in the context of the common destiny. This is an extremely important time for New Caledonia, which is at an historical turning point. Indeed, the output of the Noumea Accord will cause a redefinition of the institutional balances between the State, the community and the three provinces that make up the territory. At the heart of the Accord, the Kanak identity and its daily expression - custom and customary values - must find their rightful place in the contemporary legal system of New Caledonia, the latter is for the moment still included in the French constitutional legal system. New Caledonia is a land of cultural pluralism, which entails necessarily a legal pluralism. Therefore, the Caledonian law which is training cannot ignore the Kanak custom and customary values. But how can we know them? By definition the custom is oral and is also different according to the tribes. There are already customary chambers in State courts. Customary assessors are in charge for assisting a civil judge who makes decisions based on customary rules. There is also a special service and customary civil status registers reserved for people of customary personal status. The existence of customary officers, who are a kind of customary notaries, was also enshrined in the law applicable at New Caledonia. But customary law and rules that cause the application of the custom are still poorly known. As for the rules that allow normative integration of the custom and rules that must be used to settle conflicts of personal statutes, they are almost non-existent. The French Ministry of Justice (law and Justice Research Mission) asked the LARJE of the University of New Caledonia and the Private Law Team of the University Jean Moulin - Lyon 3 to realize a large research on these issues. For two years, the research team (composed of jurists, sociologists and anthropologists) worked with two goals in mind. The first was to develop an inventory of customary law because it had never been done. The second objective was to reflect on the best receiving modalities of Kanak custom in the normative corpus.

The final report is currently being written and will be finalized to end of August 2016. My contribution during the PIURN conference will be the opportunity to make a synthetic presentation of the final report.

Assoc. Prof. Semir Al-Wardi

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French Polynesia and the Forum

How can we analyse the juridical and political difficulties of membership to the Forum. Some non-fully sovereign entities such as the Cook are member, while French Polynesia is not. Is there really a difference between the concepts of « self-government » and « autonomy » ? Is there a double standard in the processes of becoming member. Or are some of the difficulties created by the main regional powers?

Prof. Arnaud de Raulin
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Culture and Biodiversity in South Pacific

Indeed, “Traditional knowledge” and cultural sites in the Pacific region are under a very specific legal protection that can be found elsewhere in most native societies. For twenty years, French Polynesia and New Caledonia have been creating regulations also known as “Loi du Pays” focusing on cultural patrimony’s protection. These regulations diverge from the one that have been emitted by the South-Pacific commission. Although such legislation based on international agreements and internal law remains at an early stage on its process, it is a clear expression of a need for identity acknowledgement and a strong will to protect biological patrimony. This thematic will have for main purpose to analyze new fields of studies regarding biodiversity and the interaction between environmental rights on a large scale and the right of biological and cultural heritage in particular.

Prof. Jean-Paul Pastorel
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The evolving principles and practices in customary land tenure systems in the French Polynesia in the 21st century

The critical issue of the land reform in French Polynesia is a recurring problem that prevents any economic development because and perpetuates a kind of legal uncertainty of land ownership. Colonization and gradual introduction of the French Civil Code in Polynesia have not solved the problem. Nearly a century later, the French Polynesia is still confronted with this intractable problem and the complex division of responsibilities between the French State and the French Polynesia is an additional difficulty. How to meet this challenge? What avenues borrow to provide adequate solutions to the problem?

Peter Navus
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Training environment for the farmer to learn and make decisions; the PNG experience

Farmer training with appropriate design and package will contribute meaningfully to sustain farmer livelihoods as well as the policy makers and planners. The Integrated Agriculture Training Program (IATP) facilitates such a package. Participants learn that for one enterprise activity such as to plant a *Pak Choi* cabbage in one hundred square meter of limited land, available resources (land, labour, capital, management skill & relevant information) must be identified. Only then the activity plans can be put into a systematic schedules that involve the planning, organizing, and implementation and at the end the control or the monitoring of the progress. The package is irrelevant unless the evaluation is conducted at the end also in a systematic way in assessing both the learning as well as the output of the training by a series of evaluation at post training session.

Bio: Peter Navus is the Head of Agriculture Department at the School of Natural Resources.

Dr Lalotoa Mulitalo
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 University of Queensland

Growth within customary lore and state law – an analysis of land laws in Samoa

The Constitution of Samoa provides that 'All land in Samoa is customary land, freehold land or public land'. Customary land accounts for some 80%, freehold land for 4% and State land 16%, of the combined land area of 2,800 square kilometres. An analysis of the 277 Acts of Parliament of Samoa to 2015 shows that there are some 19 Acts of Parliament which impact directly or indirectly on the 3 categories of land under the Constitution. Out of this number, 5 Acts have direct effect on customary land. This presentation outlines the objectives of these 5 Acts of Parliament. The presentation will end with a brief overview of the most recent of those Acts and most relevant to this Session – the Customary Land Advisory Commission Act, 2013 (Samoa).

Bio: Lalotoa Mulitalo is the Legal Advisor to the Samoa Parliament. She is based at the Office of the Clerk of the Legislative Assembly of Samoa.

Savelenoa Mareva Betham-Annandale
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 Samoa Law Society

Growth within customary lore and state law. Balancing retention and development of customary land in Samoa

Customary Land is fiercely protected by Samoans as their God given inheritance, owned by the whole family as the beneficial owners and often entrusted to a few, the matai sao, to care for and manage its use. Land is passed from one generation to another through matai titles, for the use and benefit of the whole extended Samoan family.

As Samoa's economic development moves forward, it finds itself at the junction of embracing global demands on land for economic development and the challenges of being able to supply land for such developments given people's concerns about their abilities under the current legal system to retain ownership of customary land.

This presentation discusses attempts to address economic development in a modern world, without losing the status of Samoa's customary land to 'development'. It will examine the legal framework within which customary land in Samoa is owned, managed and used, the issues encountered and the concerns arising from embracing economic development.

Bio: Savelenoa Mareva Betham-Annandale is the President of the Samoa Law Society.

Prof. Alan Quartermain
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 University of Goroka

Influence of Village Oil Palm Plantings on Smallholder Farmer Land Use and Livelihoods

An interview survey was conducted in West New Britain Province, Papua New Guinea, with 55 participants both male and female and with ages ranging from 15-69 years. After the introduction of oil palm in plantation and land settlement schemes in 1969, smallholders were given the opportunity to plant palms on up to 4 ha of their traditional land. However, most farmers planted only 2 ha. Survey results show that nearly all the smallholders retained food gardens to provide for their livelihoods but attendance by farmers to their gardens is irregular with only one third attending to their gardens 1-3 times in a week. Instead of working in their food crop gardens, farmers devote substantial effort to harvesting, pruning and ring weeding of their oil palm. Among identified disadvantages, oil palm has caused a reduction in the availability of garden land, an increase in family disputes, a decline in food crop yields and a trend to move gardens closer to the village because of stealing being experienced by 84 percent of respondents from gardens close to oil palm blocks or further away. Farmers also mentioned increased social problems such as an increased incidence of HIV/AIDS and it was identified that a high proportion of both sexes spend time gambling and of males spending oil palm income on drinking. Identified benefits of growing oil palm, apart from income, is that farmers use fertilizers given by the company for their oil palm blocks to apply to their food crops to counter yield decline. During paydays, a proportion of the money obtained from oil palm is used to pay for labour to work in the gardens, a positive benefit for females. Male farmers were far more positive than females about the benefits from growing oil palm with 68 percent of the females saying that there are no good things about oil palm while 69 percent of males identified income as the major benefit. Apart from going to oil palm blocks and gardens, 30 percent of the males sell food crops in the market as well as fishing and attending to cocoa. The results clearly show that the bad things about involvement in oil palm out-weigh the good things in relation to the effects on food crop gardening.

Bio: Alan Quartermain specializes in Agricultural Sciences based at the Centre for Natural Resources Research & Development.

Peter Lokeni
 Samoa Water Authority

Water and Community – two different hats: water service challenges in Samoan communities

Traditional community perceptions verses government's perspective on water services development in Pacific countries, using Samoa's experience as a case study. The analogy of the Hat symbolises the mindset from which a person sees or interpret things from his or her own perspective. This mindset depends on several factors, for instance: political, social, economic, environmental, etc.,. The Hat also spells out a cumulative view that people sometimes utilize to cope with other people's view of something. The community wears the hat of traditional beliefs and perspectives such as the notion that water is a God-given free resource, hence water services should also be free. On the other hand, the Samoa Water Authority's hat or perspective is that water services involve a lot of complex processes and expensive infrastructure (or reticulation system) which requires financial resources to run and maintain. What will happen if we convince the community to wear the same hat as government? It will be too complicated because each community will have different preferences; hence a one-size-fits-all approach won't work. The installation of water meters for treated schemes can be a simple example. It will either be rejected by the community, or they will refuse to pay for water bills to cover costs for the utility or maybe others recognised the deployment of water meters in the community as a means of earning income for the government rather than a means of controlling usage.

Assoc. Prof. Nicole Haley & Dr Roannie Ng Shiu

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Palota Samoa: the 2016 Samoa Elections & Launch of the Samoa Election Observation Project Report

The 2016 Samoan election was preceded by a number of amendments to electoral processes. Therefore this election provided a unique opportunity to explore key political issues such as women's political participation and attitudes towards cultural and customary gifting. State, Society and Governance in Melanesia Program (SSGM) collaborated with the National University of Samoa (NUS), the Samoa Office of the Electoral Commission (SOEC) and Leadership Samoa (LS) conducted the 2016 Samoa Parliamentary Elections Observation Project. This project follows successful SSGM election observation projects in Papua New Guinea and Solomon Islands. This panel will discuss the research methods using technology and highlight the key findings from the election projects.

Bio: Nicole Haley is Convenor and Fellow of the State, Society & Governance in Melanesia Program. Roannie Ng Shiu is the Convenor of Pacific Studies and Research Fellow at the ANU College of Asia and the Pacific.

Assoc. Prof. Patricia Paraide

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Divine World University

Formal Integration of Indigenous and Western Number and Measurement Knowledge

This paper aims to illustrate that mathematical knowledge is embedded in languages and cultures, and that it is applied in practical ways. Similarities between number and measurement knowledge in the indigenous and Western mathematical constructs, and how these could be linked to formal mathematics teaching constitute the focus of discussions in this paper. *Tabu*, the currency of exchange among the Tolais of East New Britain Province in Papua New Guinea (PNG), is used to illustrate some of these similarities in the use of number and measurement.

Ascher (1991; 2002) discussed the practical application of mathematical knowledge in indigenous people's lives; also pointing out the similarities between indigenous and Western mathematical knowledge. Ascher stressed that linking indigenous and formal mathematical concepts and knowledge in formal learning environments can strengthen the students' understanding of mathematical concepts. However, such knowledge links must be formalised in school curricula (Battiste, 2002) and supported by adequate teacher training (Paraide, 2014).

Constructivist theories (i.e., Piaget's) generally guide the development of school curricula which include mathematics teaching/learning strategies. These theories support using languages that students know best in formal instruction (which includes the teaching practices/learning of mathematics). They argue that people produce knowledge and create meaning based upon their lived experiences. These principles are manifested in learning theories, teaching methods, and education reforms the world over. Vygotsky (1962) and Crotty (1998) are also of the view that people generally construct knowledge and

master various skills through social interactions. The constructivist theory states that, during formal learning, building on what the students already know can advance and strengthen their cognitive development.

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Indigenous Land Issues: an Australian Perspective

In this presentation I will give an overview of Australian Indigenous land ownership aspirations focusing in on the present day Native Title Act and noting in the process the influence of 'Pacific' forms of land ownership on the current land regimes in Australia. The key forms of cultural responses to colonialism in Australia will be presented and explored as will the tension between indigenous communal land holding and the drive for private land holding being pushed by the Australian nation state and its bureaucracies.

Bio: Raymond Madden is a Lecturer in Aboriginal Studies in the Department of Social Inquiry. His research areas are in Aboriginal Studies and Anthropology.

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Papua New Guinea's Experience in Sustainable Development

Sustainable Development is not new to Papua New Guinea. At independence the country adopted it as one of its National Goals and Directive Principles. PNG's participation in many international agreements have since validated the wisdom of this foresight. However, despite these agreements little progress has been made in adopting it in development policies and plans, including human capital development to underpin the shift to sustainable modes of socio-economic growth. This paper discusses latest developments associated with collaboration between Government and the University of PNG in mainstreaming sustainable development in development policy and human resource development.

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The Impact of Inland Fish Farming in the Eastern Highlands Province, Papua New Guinea

A survey of 80 inland pond fish farmers was conducted in the Eastern Highlands Province of Papua New Guinea to assess whether inland fish farming is having a beneficial effect on the health, social circumstances and livelihoods of the farmers. Inland fish farming was introduced in the highlands to improve and sustain nutritional status, especially protein consumption, and to provide a means for smallholder farmers to earn cash income. The survey results show that positive aspects outweigh the negative. The formation of a local Fish Farmers Cooperative Society, an increase in the number of fish ponds owned by individual farmers and an ever increasing number of new farmers showing interest in fish farming indicate sustainability and growth. Having the majority of respondents' ponds close to the farmhouse and main road is a bonus for adequate management of ponds and marketing of fish. This scenario fosters ambition and interest by these farmers to request extension services so far not adequately supplied. It is encouraging that the bulk of customers come from the rural areas and most of the respondents consume some or most of their own fish. They identify and rate fish as the livestock most easy to look after and agree that fish is more nutritious than other kinds of meat. Having most of the farmers realizing and experiencing the nutritional benefits that fish provide is a practical achievement. Unfortunately, these fish farmers have continued to experience obstacles to achieving intended benefits. Lack of financial support and inconsistent cash flow were identified as primary obstacles, followed by theft of fish. Lack of extension visits, inadequacy of fingerling supply, feeding problems, and needs for materials and equipment are just some of the obstacles continuing to hamper the progress of inland fish farming. If these issues can be addressed adequately then fish farmers will definitely experience the benefits that fish farming is intended to provide.

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Providing appropriate training tools and support to people in rural societies is the key to changing their livelihoods and standards of living

Introducing innovative ideas to improve livelihoods of subsistence farming families in the rural societies of Papua New Guinea (PNG) comes with a lot of challenges. A four year study carried out in 3 provinces in PNG highlighted that the standard of living for families in rural societies in PNG can be improve if appropriate tools, training and support is given to the people concern. This paper will discuss some of the challenges that hinders development to occur in the rural societies in PNG and will highlight the different solutions that were provided by the research team to address some of these challenges.

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The Role of Engaged Anthropology in Agricultural Extension and Rural Development

A case is made for an extended role for applied anthropology to enhance the utility of agricultural extension in fostering rural development in multi-cultural Melanesia. Clearly the continued health of smallholder agriculture and wise land use are critical in any concept of rural and hence national development in these countries. But the role and efficacy of agricultural extension as conventionally understood has come under severe criticism to the extent that it is said to have failed since the mid 1980s. There are a number of suggested reasons as to why this should be so but it is argued that a primary factor underlying this perception is a deficiency in understanding of the acculturation and change processes which have been taking place for millennia and continue in Melanesian society. There is a dichotomy between those in leadership positions promoting change, characterized as development, and the range of stakeholders, villagers, women, some NGOs, especially in remoter areas, expected to participate but seem unwilling or unable to do so according to expectations. It is a suggested function of anthropologists, trained and experienced in ways not found in agricultural scientists and technicians, to understand this dichotomy and suggest resolutions or simply patience, not to take sides but to educate service providers, especially extension agents. Sound agricultural evolution is a slow process and, unless forced in ways anathema to social democracy, it is necessary to proceed in holistic harmony. While rural sociology is taught in tertiary agricultural education it is argued here that this is inadequate training to deal with the problem and that it is necessary to engage anthropologists willing to undertake the required research and educational roles.

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