

SOPAC

ANNUAL REPORT SUMMARY

2008



Pacific Islands Applied Geoscience Commission



Overall Vision:

Natural Resources, principally non-living resources, developed in a sustainable manner and resilience of Pacific peoples strengthened

Member Countries

American Samoa (Associate)
Australia
Cook Islands
Federated States of Micronesia
Fiji Islands
French Polynesia (Associate)
Guam
Kiribati
Marshall Islands
Nauru
New Caledonia (Associate)
New Zealand
Niue
Palau
Papua New Guinea
Samoa
Solomon Islands
Tokelau (Associate)
Tonga
Tuvalu
Vanuatu

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Director's Foreword

Cristelle Pratt

This annual report summary provides a snapshot of the work undertaken by the SOPAC Secretariat in the reporting period October 2007 to October 2008. The report also highlights issues and opportunities that have emerged during the mentioned reporting period, for the three technical work programmes of [Ocean and Islands](#), [Community Lifelines](#) and [Community Risk](#).

The Strategic Plan 2005 to 2009 remains the core guiding instrument for SOPAC and its technical work, with our accompanying annual business plan and work plan and budget the operational documents used by the Secretariat over the short term.

Since 2007, SOPAC has engaged with SPC and SPREP in respect of the Regional Institutional Framework (RIF), which is the rationalisation of SOPAC's functions into them and we will most certainly be dedicating some of our resources to continue to engage constructively throughout 2009 with key stakeholders such as our members and those of SPREP and SPC. This we trust will ensure that this key Pacific Plan initiative of Pacific Forum Leaders and of our respective governing bodies is progressed to a an outcome that benefits Pacific countries and territories in terms of delivery of cost effective and improved technical services.

As the Technical Secretariat of SOPAC, delivery against the technical work programme into our member countries remains our key focus. To achieve this we need to be able to continue to attract, recruit and retain appropriately qualified scientific and technical personnel. The more than three-fold increase in the budget over the last few years has required the recruitment of additional personnel to support delivery of results across all of the work programme areas. It has also meant that the Secretariat has needed to be creative in accommodating these additional staff by refurbishing a building provided to us by the Government of Fiji, with works due to be completed in December 2008.

I am pleased to be able to report that in a crowded year of exciting action in respect of delivery, securing additional resources and engaging in the RIF, the Directorate has still been able to visit 60% of SOPAC's members. Such member country missions are essential if the outputs of SOPAC's Secretariat are to

"I trust that Council's debate and decisions on the matter of the regional institutional framework [RIF] will ensure that the final outcome for the region will indeed be an improvement in the technical services that are delivered to the island member countries and territories of SOPAC, of SPREP and of SPC."

SOPAC Director, Cristelle Pratt
Opening Remarks, SOPAC 37th Session

contribute to a sustainable development outcome. It also ensures that the Secretariat's focus and technical support remains relevant and that key stakeholders at the national level are aware of the areas of technical competency and the services and integrated solutions delivered by SOPAC and available to them.

The challenge to realise outcomes, which is the true yardstick for success by donors and by members, can only be achieved as a partnership between the Secretariat (the provider of outputs) and relevant stakeholders in-country (the catalyst to outcomes).

Exciting opportunities to address the challenge of moving from outputs to outcomes have presented themselves in SOPAC through such initiatives as the implementation of the EDF9 B Envelope multi-country project which commenced in May 2008, to address water security and challenges in respect of emergency communication and early warning systems in eight member countries. We have also been supporting Kiribati in the design of the soon to be implemented sustainable aggregate mining initiative, which seeks to address the issues of over-extraction of beachsand that has undermined the coastal resilience of Tarawa atoll.

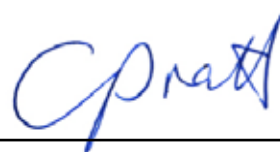
We have had a particularly successful year in service delivery and I wish here to highlight one, noteworthy initiative of our Ocean and Islands Programme. Close, collaborative efforts between SOPAC and key institutional partners and the technical and legal teams from the Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Palau, Papua, New Guinea, Solomon Islands, Tonga, Vanuatu to prepare submissions under Article 76 of the United Nations Convention on the Law of the Sea, for potential extension of their Continental Shelf beyond two hundred nautical miles continues in earnest. All of these countries excluding Kiribati have to meet the May 2009 deadline and we are confident that this will be achieved. The implications for an extended continental shelf for the mentioned member countries would be sovereignty over seabed and sub-seabed biological and mineral resources beyond two hundred miles.

I wish to echo the gratitude of SOPAC members expressed at the SOPAC 37th Session in Funafuti by personally acknowledging the development partners that continue to support SOPAC; and in particular the European Union that under seven project initiatives with SOPAC provided funds in the order of FJD 10.155 million for 2008. It is my pleasure to advise that the result of a comprehensive institutional assessment of SOPAC carried out by the European Union in 2007 has enabled SOPAC to enter into contribution agreements with the EC that offer greater flexibility in implementation as we are able to now use our rules of procedure.

We also participated in the Joint Australia and New Zealand Review of Regional Organisations and we trust that the outcome of this review will lead to strengthened engagement under future programming arrangements with them as this provides predictability in programming support from donors and enables a more stable environment for the Secretariat to deliver its work programmes.

The period covered in this Report came to a close with the Secretariat expecting an even more intense period of work in 2009 given the deadline for defining the new institutional arrangements under the RIF, to be decided by the governing bodies of SOPAC, SPC and SPREP, and implementation to commence from January 2010.

I am extremely proud of the professionalism of SOPAC staff in constantly raising the bar in terms of sustaining work programme delivery even under the climate of uncertainty as to the future of SOPAC. I look forward to tendering my sixth and final annual report as Director of SOPAC next year and to participating in serving members and engaging in RIF actions that will surely bring outcomes that will determine different arrangements in regional service delivery.



May 2009

KEY WORK PROGRAMMES

Ocean & Islands

To improve technical knowledge of ocean and island ecosystems for the sustainable management of natural resources.



Community Lifelines

Improved community access to energy, water and sanitation, and information and communication technologies for sustainable livelihoods.



Community Risk

To improve disaster risk management practices to build safer and more resilient communities.



Introduction

Since its inception in 1972, SOPAC has expanded considerably to become a leading regional organisation in the provision of applied science and technical support to Pacific member countries to help them achieve and maintain their economic and social potential.

SOPAC is committed to sustainable development through capacity building and works to reduce poverty and strengthen resilience in the Pacific by supporting the development of natural resources, in particular non-living resources. SOPAC work investigates natural systems and the management of vulnerability through applied environmental geosciences, appropriate technologies, knowledge management, technical and policy advice, human resource development and advocacy of important Pacific issues.

SOPAC provides support, guidance and advice to member countries in the three programme areas of Ocean and Islands, Community Lifelines and Community Risk.

The Ocean and Islands Programme is committed to improving technical knowledge of ocean and island ecosystems for the sustainable management of natural resources through: resource use solutions; monitoring physical and chemical change in ecosystems; and natural resources governance.

The Community Lifelines Programme aims to improve and strengthen community access to energy, water and sanitation, information and communication technologies through: resource assessment, development and management; asset management; and governance and advocacy.

The Community Risk Programme aims to build safer communities through improved disaster risk management practices by strengthening resilience to disasters; mitigating the effects of hazards; and mainstreaming disaster risk management.

Programme areas are supported by Corporate Services that provide an information technology unit, publication and library services, and offers technical and field assistance.

Currently the SOPAC member countries are: Australia, Cook Islands, Federated States of Micronesia, Fiji Islands, Guam, Kiribati, Marshall Islands, Nauru, New Zealand, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu. American Samoa, French Polynesia, New Caledonia and Tokelau are associate members.

Who funds SOPAC?

SOPAC was funded by member country contributions and supported by the following donors in 2008: Australia (including the Australian Volunteers International (AVI), Geoscience Australia (GA-PGSP) and Bureau of Meteorology (BOM) Australia), Denmark, the European Union (Water Facility, EDF9 B-Envelope, REP5, EC Regional Technical Facility), Fiji Islands, Japan, Korea (Republic of), New Zealand, Technical Centre for Agricultural and Rural Cooperation (CTA), The Asia Foundation/Office of US Foreign Disaster Assistance (TAF/OFDA), Taiwan/ROC, United Kingdom (ODI) and various UN agencies (inclusive of the Global Environment Facility (GEF), WSSCC and UNESCO/IOC). The following partners also financially supported specific activities in 2007: the Australian Youth Ambassadors (AYA), the Asia Pacific ICT Center (APCIC), e-Parliament Secretariat, Kiribati, (US) National Oceanographic and Atmospheric Administration (NOAA), International Open Source Network, Papua New Guinea, Renewable Energy and Energy Efficiency Partnership (REEEP), Secretariat of the Pacific Environment Programme (SPREP), Information Society Innovation Fund (ISIF), Pacific Chapter of the Internet Society (PICISOC), International Federation of the Red Cross and Red Crescent Societies (IFRC), and Foundation for Development Cooperation (FDC).



Ocean & Islands Programme

SUMMARY OF HIGHLIGHTS

Highlights of the Ocean and Islands Programme (OIP) activities in the reporting period (2007/2008) are summarised under its three component areas of:

1. Resource Use Solutions
2. Monitoring Physical and Chemical Change in Ecosystems
3. Ocean Governance

1. Resource Use Solutions

a. Deep Sea Minerals

The issue of Deep Sea Minerals appears within this section “Resource Use Solutions” however, the immediate regional priorities for this issue lie more within “Ocean Governance”, see component 3 and that issues of resource use and monitoring physical and chemical change will become equally important as this initiative progresses and mining eventually becomes a reality.

Deep sea minerals and hydrocarbons were and continue to be part of SOPAC’s *raison d’être*, regaining significance over recent years with grants of exploration licences by a number of member countries over large tracts of their EEZs. Data generated during the 1985-2005 Japan/SOPAC Cooperative Study on Deep Sea Minerals Resources has been transcribed and this data will ultimately be placed on a web accessible “Geonetwork” server, and will provide a valuable source of relevant data and information for marine scientific research, as well as mineral exploration.

ocean & islands programme

b. Aggregate Resources (sand, gravel & rock for building)

SOPAC's integrated approach to this issue, ensures that adequate building aggregate supplies are secured for development whilst unsustainable practices such as beach mining are discouraged and eventually replaced. Work has continued in South Tarawa, Kiribati and on Majuro, Marshall Islands and Funafuti, Tuvalu recognising that beach mining in the context of atolls, directly threatens shoreline integrity and increases community vulnerability. In the face of mounting concern over climate change and sea level rise such approaches are the cornerstone of SOPAC's "no regrets approach" to climate change adaptation and highlight how practical approaches to resource use issues today can mitigate against threats for tomorrow.

- In August 2008 the EU Delegation, the Government of Kiribati and SOPAC signed a €2.2M agreement to establish a sustainable lagoon aggregate company in Tarawa and work is now underway to tender for a dredge.
- In June 2008, the findings of SOPAC's intensive work on the potential of Majuro's lagoon aggregate resources to replace beach mining was delivered to stakeholders and local aggregate industry companies. The EPA will now issue licences to allow sustainable lagoon dredging in selected locations within the Majuro Lagoon.
- Work continues in Funafuti to explore the best aggregate resource options for this small community where the scales of economy demand a unique approach to this issue.
- An analysis of the potential of Nauru to become a net exporter of high quality limestone to supply construction rock and gravel needs of Tarawa, Funafuti and Majuro has been completed.

Additional work related to aggregate has also been undertaken in Fiji, Navua River where the impacts of river aggregate mining were also the subject of an environmental assessment and ultimately local communities were assisted to better manage this resource and derive more equitable income from the sale of aggregate. Assessment of terrestrial aggregate resources in Palau have been undertaken to gauge their potential to replace environmentally damaging, nearshore dredging and costly imports; and surveys in Cook Islands, on Mangaia and Aitutaki will assist to secure sustainable sources of quality building aggregate.

Many of these studies relating to aggregate assessment were funded under the EDF8/9 "Reducing Vulnerabilities of Pacific ACP States" Project, which concluded at the end of 2008.



c. Bathymetric Surveys (seafloor mapping) & Hydrodynamic Modelling (water flow modelling)

Four bathymetric survey missions were completed in Papua New Guinea including in the Yonki and Sirinumu Lakes in Papua New Guinea where authorities requested SOPAC to assess sedimentation. The lakes are of critical importance as they represent storage area for hydro-electric power for Port Moresby. The results show that sedimentation does not appear to be an immediate problem however the key to preventing future sedimentation issues will involve use of best practice catchment management approaches. During this same mission several transect surveys across Buka Passage were undertaken to facilitate appropriate cable placement.

An intensive field survey was conducted over six weeks in Aitutaki, Cook Islands. This included lagoon and outside (ocean drop off) bathymetry, as well as the collection of a comprehensive range of oceanographic and habitat data. These baselines will now be used to produce a hydrodynamic model of lagoon current patterns including addressing the Cook Islands Government specific concern regarding the impacts and options to increase the volume of the existing harbour channel in Aitutaki. Cook Islands counterparts were involved at every stage of this process and in August 2008 were brought to SOPAC to join an intensive three-week training session with the Marine Survey Team to complete habitat map products of Aitutaki Lagoon. Habitat maps refer to the complexity of the sea floor and outline important biological features such as corals and seagrass; such maps when combined with water flow information provide the best possible baseline tools for marine resource management and also facilitate and are useful to guide development planning and future monitoring.

Using data supplied by the Federated States of Micronesia Government, OIP has integrated LIDAR data with data from the 2007 multibeam survey to develop a three-dimensional model of the Kolonia Harbour and surrounds (Pohnpei). The suitability of the data to be used in hydrodynamic modelling would be assessed and appropriate map products from these highly accurate datasets would be developed.



d. Wave & Tsunami Modelling

OIP has remained committed to developing and expanding its computer-based modelling capacity with significant investments in hardware, software and training. These approaches are seen to greatly complement existing bathymetric and oceanographic products and can provide important additional information to members. For example, building understanding of climate-related vulnerability issues and potentially providing products to the Community Risk Programme (CRP) for use in hazard mapping and disaster management such as storm wave and tsunami wave modelling.

The importance of collaboration and coordination of efforts on this highly technical and evolving science is increasingly being recognised and in December 2007, OIP's hydrodynamic modeller worked in collaboration with NIWA on the Kiribati Adaptation Project to produce wave "set up" models on the South Tarawa Lagoon shore. Such products can be used to assess vulnerability of these shores to wave impacts such as over topping/flooding and erosion. Additionally, in early 2008 the OIP modeller undertook an intensive three-month technical attachment with Geoscience Australia to build the Secretariat's tsunami modelling capacity. Preliminary tsunami inundation models for Tongatapu, Tonga; and Gizo, Solomon Islands are now being generated.

Some very important and unforeseen benefits have come from the investment in computer modelling. Different forms of modelling have become the standard approach when discussing climate change projections, projected impacts and adaptation design. However, whilst such models are extremely important and regional and international efforts should be increased, the results from all models must be assessed critically, as all models reflect the quality and comprehensiveness of data from which they are derived. The Pacific Islands region is notorious for its lack of adequate baseline data and as such, there must be realistic expectations of what models can tell us.

To this end OIP hosted an AVI Volunteer for twelve months who reviewed the availability of data necessary to model tsunami wave incursions for Tonga, Niue, Kiribati, Solomon Islands, Fiji and Tuvalu and this has shown that some consistent data gaps exist which prevent adequate computer modelling. Of paramount importance at this time to support wave incursion and sea level inundation modelling, is the availability of high-resolution topography (land height information). Few if any PIC have this data at sufficient levels of accuracy or coverage to allow meaningful modelling approaches to be developed.



2. MONITORING PHYSICAL AND CHEMICAL CHANGE IN ECOSYSTEMS

a. SPSLCMP Phase IV (South Pacific Sea Level & Climate Monitoring Project)

OIP continues its joint arrangement with the Bureau of Meteorology (BoM – Australia) to undertake precision levelling to ensure accuracy and also to maintain and calibrate the SEAFRAME (sea level) gauges and CGPS (Continuous GPS – for accurate measurement of vertical land movement) Stations in 12 States across the region. SEAFRAME also collects wind direction and speed, barometric (atmospheric) pressure and temperature data and in response to member requests sea level data from all these stations has been made available to country meteorological services via the Bureau of Meteorology Australia (BoM) web site in real time. Additionally, SEAFRAME gauges are gradually being upgraded to support tsunami-monitoring/warning needs.

The SPSLCMP Regional Communications and Coordination Adviser has greatly facilitated liaison between SOPAC/BoM and member countries on the purpose and importance of the SEAFRAME system and has developed both the SPSLCMP Communications Strategy, outreach products and ensured Project visibility and advocacy at a number of regional events such as the recent Forum Leaders' meeting held in Niue. Links and lessons between the Caribbean sea level monitoring array and SEAFRAME are also being explored. SOPAC/SPSLCMP jointly funded and organised the Pacific Islands Marine Data and Observations Training Workshop (September 2008) with PI-GOOS, which will highlight the data collected by the SEAFRAME system.

b. PI-GOOS (Pacific Islands – Global Ocean Observing System)

PI-GOOS via the OIP-based Coordinator facilitates regional access to a wide range of remotely-sensed oceanographic monitoring products. In many cases such products are freely available (e.g. NOAA's coral beaching warning system) however regional awareness of these products and how they can be used is poor. In recognition of this, PI-GOOS partnered with SPSLCMP to jointly resource and organise a data awareness and training workshop in Nadi, Fiji, September 2008. Participants from all member States attended and a range of freely available products were demonstrated, including examples of how such products can be accessed and used to support in-country decision making, planning and environmental monitoring.

PI-GOOS has also been instrumental in assisting OIP's ongoing efforts to develop a regional shoreline monitoring system. Central to these efforts is access to regional historical air photography and the PI-GOOS Coordinator has secured resources and facilitated access to these data products. Additionally, PI-GOOS has facilitated the development of the SOPAC-based "Geonetwork" data server, specifically designed to store and provide access to a range of regional marine and oceanographic data. PI-GOOS has recently also secured a permanent off-site (NOAA, Hawai'i) backup service for Geonetwork to ensure data security.

c. Coastal Monitoring (erosion)

Coastal erosion has been discussed as a regional concern at numerous regional, national and international climate change fora. OIP has initiated efforts to monitor shoreline response to climate change stress, sea-level rise as well as development pressures using historical aerial photographs and state-of-the-art, high-resolution satellite imagery. Using these tools OIP is working to detect possible long-term trends in shoreline position/change in a number of locations across the region and is working to be in a position where we can advise the membership of any trends in shoreline response to stress such as sea-level rise.

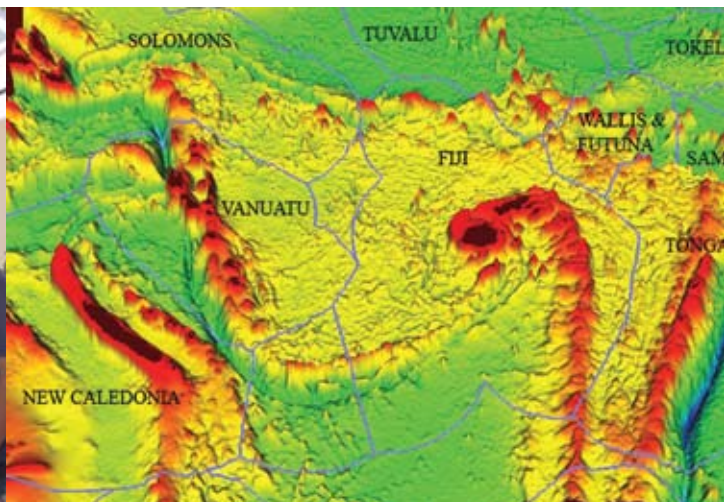
Accurate measurement of some climate change phenomena such as sea-level rise has been ongoing for a number of years however there are no parallel efforts to monitor the expected effects, such as erosion, of sea-level rise on PIC shores. OIP in recognition of the importance of this issue, particularly for atoll communities, has undertaken this task without dedicated funding or resources. The preliminary results of this work are already providing important information to assist countries with coastal planning and adaptation and this approach has now received strong support from a number of academic and applied science interests both regionally and internationally.

SOPAC believes shoreline stress (erosion) is a question of great importance in the Pacific region particularly for atoll communities and would continue to bring this urgent need to the attention of donors to better resource such practical efforts.

3. OCEAN GOVERNANCE

a. Deep Sea Minerals

Over the last few years deep sea mining companies, led particularly by Nautilus and Neptune have made very significant advances in progressing the region's Deep Sea Mineral potential into an industrial reality. At the time of writing, prospecting and exploration licences totalling over one million km² and involving Papua New Guinea, Solomon Islands, Fiji, Tonga, Federated States of Micronesia, Vanuatu and New Zealand have been granted. Many more applications have been submitted but at this time Tonga, New Zealand and especially Papua New Guinea are most advanced in this process (mining is expected to begin in Papua New Guinea by 2010).



A growing concern has been the lack of policy and regulatory guidance on the issue of offshore minerals in most member states. SOPAC remains engaged on this issue and has been in preliminary discussions with a number of members to provide advice and assistance over the period. Additionally, SOPAC has been in discussion with the World Bank and partners such as Geoscience Australia and the Commonwealth Secretariat; and plans to hold a jointly organised regional meeting later in 2008 or possibly in early 2009, pending funding arrangements. This meeting will bring together countries to brief them on the current status of this industry, its regional potential and the vulnerabilities of PIC to unregulated exploitation of deep sea resources in the absence of adequate regional treaties, policy, fiscal and legislative frameworks.

It is planned that the meeting will formulate a regionally agreeable work programme to ensure that adequate regional and national support and mechanisms are developed and put in place to ensure that this industry evolves in a manner which is fiscally and technically feasible and protects the interests and environments of PIC's. It is also recognised that the challenges this industry presents are cross cutting in nature and require not only an initial effort to establish regional policy frameworks but will require ongoing technical support to countries. SOPAC is also aware that it is likely to have a strong role supporting nations in the monitoring and regulation of this industry over the coming years.

b. Maritime Boundaries Project – EEZ and eCS

i. EEZ Status (Exclusive Economic Zone)

Cook Islands, Nauru, Niue and Tuvalu were assisted to complete base-point and update their boundary coordinate information to allow them to lodge their EEZ coordinates with UNCLOS. For Vanuatu, Papua New Guinea, Kiribati and Fiji, OIP through either updating, procuring and/or validating baselines and computed 200-NM EEZ boundaries has completed approximately 60 to 80% of these countries' validation work and data requirements.

Federated States of Micronesia, Republic of Marshall Islands, Samoa, Tonga and Palau have their own internal arrangements for this work, however SOPAC has thus far contributed 20 to 30% of the technical information necessary in support of their efforts and remains at service to these countries should they require further support. In the reporting period none of these countries had lodged EEZ boundary coordinates with UNCLOS. The status of Solomon Islands remained in question and SOPAC was not successful in obtaining information from the Solomon Islands authorities to gauge the status or progress of their EEZ work.



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Additional to this ongoing work, during 2008 individual EEZ maritime boundary teams from Papua New Guinea, Vanuatu, Kiribati and Tuvalu were hosted to undertake intensive hands-on training to develop their provisional base points and compute their EEZ boundary coordinates – this has been an extremely successful undertaking in terms of both progressing this work but also in developing in-country confidence and capacity with respect to this complex technical/legal task. Additionally, high-resolution geodetic field campaigns were undertaken in Fiji during this period and this new, accurate data will enable Fiji to update its existing EEZ coordinates.

As of August 2008 only Fiji and Nauru had lodged their EEZ boundary coordinates with UNCLOS. Considering issues such as the rapid growth in commercial interest in the region's deep sea mineral resources and the ongoing need to regulate migratory fisheries, SOPAC has had informal discussions with AusAID to develop an augmented approach to assisting PIC's to complete necessary technical, policy and legal frameworks to facilitate the declaration of their 200 nautical mile EEZ coordinates.

ii. eCS Status (extended Continental Shelf)

Those Pacific islands countries with eCS potential (Papua New Guinea, Solomon Islands, Federated States of Micronesia, Kiribati, Fiji, Tonga and Cook Islands) must develop and lodge their eCS claim submissions by 13 May 2009, except Kiribati (2013).

Recent advice from the UN Convention on the Law of the Sea (see SPLOS/183 – http://www.un.org/Depts/los/meeting_states_parties/documents/splos_183e_advance.pdf, 24th June 2008) indicated there had been relaxation of requirements for eCS submissions; however the May 2009 deadline remained.

Due to the intensive efforts of OIP's Maritime Boundaries Programme and our technical partners Geoscience Australia and UNEP GRID, all countries have progressed their respective submission documents and have significantly increased in-country capacity to complete submission work. Sufficient momentum has been generated that with continued effort over the next few months all countries can potentially meet the May 2009 deadline; however government support of eCS team in-country was essential for success.

SOPAC coordinated (with GA and UNEP GRID) and jointly funded two technical "hand-on" eCS development training sessions (Canberra, February and Suva, May) and coordinated a further related workshop by the Japan Hydrographic Association (Suva). During these workshops eCS country teams were not only shown how to progress their submissions but worked intensively on these national documents and have made very significant progress. A further workshop was planned by the same technical partners in November 2008 (PGSP AusAID funding). In June 2008, OIP submitted a concept note to AusAID's Suva mission to secure resources to better facilitate this important work and this was subsequently approved in August (AUD \$0.5million).

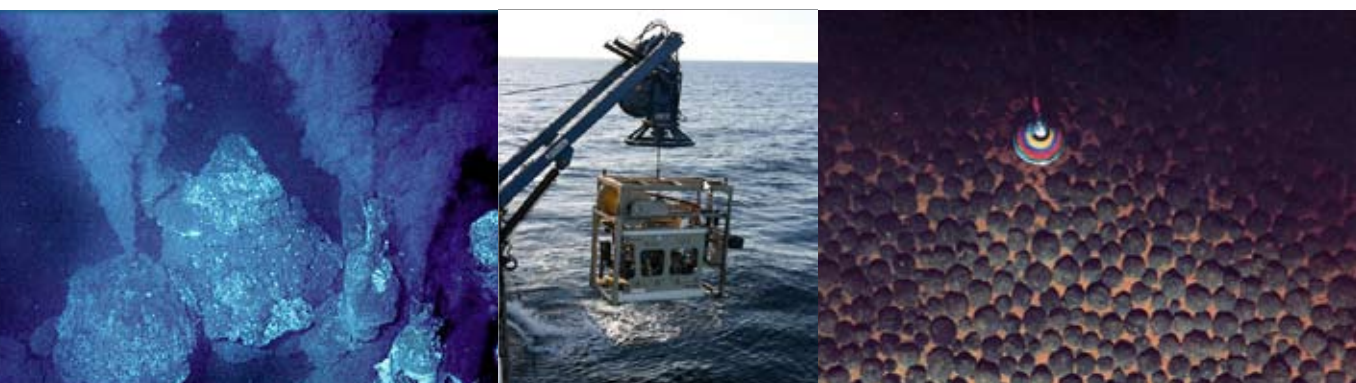
SOPAC and its technical partners believe it is crucial that the eCS submissions are primarily developed by individual national boundaries teams with continued coordination and support through technical partnerships. This is because unlike EEZ declarations, ECS submissions must be defended once lodged to the UN Commission on the Limits of the Continental Shelf. Successful defence of these submissions may be a lengthy process and could require countries to adjust their respective claims. As such, successful submission will be dependent on each country's intimate understanding of the technical and legal justification for each respective claim and their ability to incorporate the recommendations of the Commission.

c. Resource Economic Analysis, toward strengthened Natural Resources Governance

Resource Economics has been embraced by OIP and indeed all of SOPAC's technical programmes and this tool has become an indispensable consideration and component of our technical work. The relationship between resource and socio-economic analysis and technical solutions is a two-way process that recognises that the most appropriate technical solutions may not be the most socially acceptable or economically feasible options. Similarly, the widely recognised success of SOPAC's resource economics team is in part due to the robust technical support, which underlies and supports their work. Ultimately, this holistic approach to resource use solutions provides the very best information for policy makers and governments on specific issues and meaningfully contributes to improved governance in PICs.

As well as the production and release of a SOPAC-based Pacific Resource Economics newsletter and launch of a new web site, the following socio-economic studies were undertaken:

- Feasibility of establishing a lagoon basin aggregates dredging company in Funafuti, Tuvalu.
- Assessment of Nauru as a supplier of high quality limestone to urban centres on Tuvalu, Kiribati & Republic of Marshall Islands.
- Assessment of the feasibility of replacing Nauru's energy needs with LPG.
- Economic analysis of the benefits of establishing maritime boundaries in PICs.
- Economic and institutional analysis of the Melanesian Volcanological Network (recently commenced).
- Economic analysis of the benefits of bathymetric mapping – case study Niue.



NEW AND EMERGING ISSUES

1. Resource Use Solutions

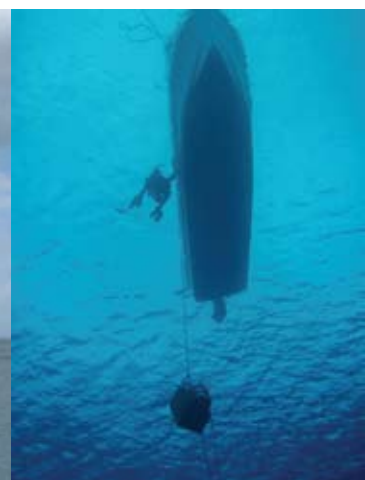
a. Deep Sea Minerals Industry Development

Deep sea minerals of potentially high commercial value have been known to occur on the sea floor of the Pacific Island region for more than 30 years. Recent developments in mining technology have allowed very significant progress towards realising the potential of these resources. By as early as 2010, deep sea mineral mining may become a regional reality. At the time of writing, prospecting and exploration licences totalling over 1 million km² in area and involving Papua New Guinea, Solomon Islands, Fiji, Tonga, Federated States of Micronesia and Vanuatu had been granted or were under consideration and, many more applications have been submitted. Of these nations, only Papua New Guinea, with assistance from the World Bank, has made significant progress in the development of legislation and regulations to guide marine mining whilst ensuring the protection of local interests and the environment.

SOPAC is in discussions with the World Bank and other partners and is in agreement that whilst deep sea mining potentially presents very significant financial benefits to PICs over the coming years, it also poses risks. If potential returns are realised from deep sea minerals during the next few years, international mining interests may rush to the region to attempt to rapidly acquire licenses under the present poorly or unregulated conditions. This in turn may result in the interests and environments of Pacific Island Countries being compromised and not being adequately protected and, indeed this may already be occurring.

Whilst the lack of regional and national regulatory measures for this industry presents a significant risk, it also presents the following distinct opportunities:

- Among the risks, are obviously the present lack of appropriate regulatory mechanisms, with the “mobile” nature of this industry allowing mining operations to potentially cross international boundaries, possibly to exploit under differing regulatory environments in different EEZs. Similarly, mineral deposits in many cases will cross political boundaries perhaps requiring mining companies to shift operations smoothly (and legally) from one jurisdiction to another with equitable sharing of revenue. These and other unique challenges highlight the need for a regional approach to the question of both the legal and regulatory frameworks, as well as the fiscal and environmental frameworks.



- The opportunities are, that the Pacific Island region has a “clean slate” to work with and that the industry has yet to become fully operational. As such, Pacific Island Countries can potentially cooperate to develop a cohesive regional platform of regulatory mechanisms to ensure that commercial interests are uniformly and safely regulated and that possible differences in jurisdictional legislation will not result in detrimental effects to Pacific Island countries or the development of the industry.

SOPAC and the World Bank (Oil, Gas & Mining Policy Division) believe that Pacific Island States would be best served and protected by developing a regional approach for an appropriate regulatory, fiscal and environmental framework for seabed mining by way of a consultative process involving representatives from each of the States. This could be achieved through a series of workshops supported by legal and technical experts from the World Bank, SOPAC, International Seabed Authority, as well as other potential partners such as the Commonwealth Secretariat. The resulting regional framework and regulatory mechanisms would then be reviewed by each coastal State and revised as necessary for their specific jurisdictional requirements and ultimately their adoption and promulgation into law.

This would provide a common regulatory foundation for all States and provide a seamless regulatory environment in which mining interests would operate safely and to the benefit of all. SOPAC and the World Bank propose to conduct a first workshop to discuss the status of the deep sea minerals industry in the region, discuss the vulnerabilities of Pacific Island Countries and present and discuss approaches to develop regional and national regulatory environments in late 2008, subject to funding.

2. MONITORING PHYSICAL AND CHEMICAL CHANGE IN ECOSYSTEMS

a. Shoreline monitoring in response to sea-level rise

Climate change is known to have resulted in accelerated sea-level rise and increases in sea surface temperature and these phenomena have potentially profound implications to shoreline integrity, the possibility of wave incursion, flooding and of increased erosion. SOPAC recognises that shoreline erosion and vulnerability, especially in atoll nations, is a threat of national importance. In response a regional monitoring network of shoreline sites is being developed to measure and assess the impact of sea-level rise on shorelines and report to members on trends of change as and when they may develop.



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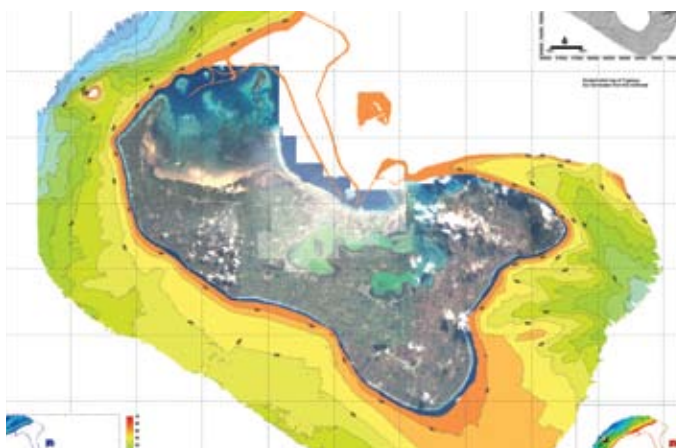
Whilst donors have supported regional efforts to monitor sea level and the collection of a range of climatic data and there is significant momentum to fund climate change adaptation, there has not been the recognition that little is actually understood regarding how natural systems such as shorelines are responding to climate change pressures. Shoreline response to sea-level rise must be monitored in order to inform governments and communities of how islands may be changing and only with such data can adequate adaptation responses be designed.

At this time, regional shoreline monitoring occurs as a result of recognising the importance of this issue and placing aside very limited resources to support such efforts. Without dedicated resources this monitoring system cannot be sustained and PIC will not have sound data to show how their shores are responding to climate change and development stress.

b. Topography (land elevation or height information)

In order to monitor environments and assist members to identify and mitigate against the risk of potential coastal hazards accurate baseline data is required. Topographic data (land height information) deserves special attention as the regional lack of adequate topographic data presents a serious impediment to all efforts to provide accurate and timely advice to members on a range of coastal vulnerability issues. Efforts in tsunami modelling and storm wave modelling have the potential to inform PIC of the dangers of wave incursion and can assist to show how best to plan for and respond to such events. Similarly, inundation modelling can show the projected impacts of flooding from climate change associated sea-level rise and storm waves; however, none of these modelling products can be delivered at a useful level of accuracy if adequate topographic data is lacking. Sea-level rise occurs at small incremental rates (ca 3.5 mm/year) and if existing topographic data has an error of 1000 mm, which is not unusual, we can not show what the impact of sea-level rise may be in the near future with any certainty and nor can we show, for example, how far waves could move inland.

PIC's correctly wish to understand such environmental stress now in order to provide guidance for adaptation and hazard and risk management. SOPAC has researched this issue since last year when it was similarly raised during the 36th Session of the SOPAC Governing Council. Specific reviews of such data availability were conducted in six Pacific Island nations and other regional and international interests have been consulted who are unanimous in the view that the lack of accurate topographic data severely hampers sea level and coastal risk related work. Modern techniques can rapidly and accurately supply such data however funding commitment from regional partners is required to make this a reality.



3. Natural Resources Governance

a. Maritime Boundary Delimitation and Extended Continental Shelf Claims

The 13th of May 2009 is the confirmed deadline for the submission of all claims for eCS (extended Continental Shelf). SOPAC with its technical partners Geoscience Australia and UNEP GRID have undertaken a series of intensive practical training workshops to progress PIC eCS submissions. At the time of writing all countries have selected their critical “foot of slope” points and have started computing the outer limits for eCS delineation. In many cases, preliminary charts are available and partial submission documents are in draft. SOPAC, with funding assistance from AusAID, would work with the same technical partners and country eCS teams to hold further eCS submission completion workshops in November 2008 and February 2009. It is critical that country eCS teams continue to receive the support of their respective governments during the final few intensive months.

Apart from eCS boundaries, negotiation and ratification of maritime boundaries generally as well as those that are shared between adjacent PICs is an important issue, given the relevance of the financial benefits derived from resources such as tuna catches and the potential of deep sea mineral resources within respective EEZs. The Pacific Islands Regional Maritime Information System (PIRMBIS) now contains the computed critical base-points and the extrapolated notional maritime boundaries for Tokelau, American Samoa, Fiji, Vanuatu, Republic of Marshall Islands, Federated States of Micronesia, Palau, Tuvalu, Kiribati, Cook Islands, Niue and Nauru. In addition, data such as existing treaties have also been incorporated into PIRMBIS. Despite this progress within the Boundaries Programme and the fact that boundary delimitation information has been available, in some cases for considerable time, countries have been slow to take advantage and declare these coordinates. Of the 45 known boundaries in the SOPAC region, 27 remain to be formally declared or agreed.

4. Cross-Cutting Issues

a. Climate Change Adaptation

Greater numbers of Pacific communities are inherently coastal entities, dependent on tropical marine ecosystems for food security and protection from oceanic extremes. Measured climate change stress such as sea-level rise, increase in sea surface temperature and the changing acidity of ocean waters, already threaten the physical and biological integrity of tropical reef systems, which protects and provides food security for the greater proportion of Pacific Island communities.

Less well understood are the expected climate change stresses, such as the increasing variability in rainfall patterns and cyclone activity with associated accelerated storm-water runoff floods and erosion, droughts, storm surges, storm-related increases in sea levels and more frequent coastal inundation. These issues have far reaching implications for community wellbeing in Pacific Island Countries. In essence, Pacific communities and their environments are among the most vulnerable to climate change stress in the world and are among the least most able to adapt.

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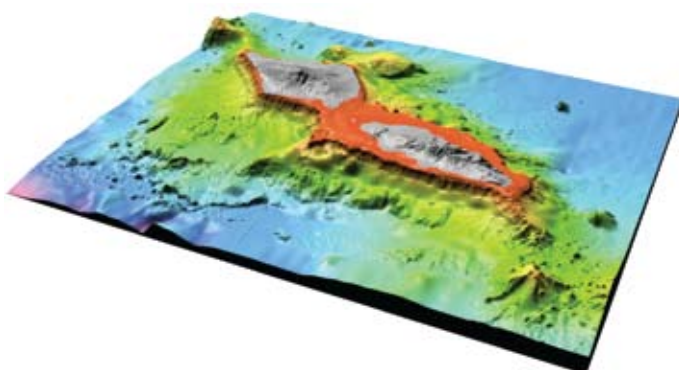
Despite this, the Pacific region remains one of the least well studied and monitored on Earth with regard to climate change science and impacts monitoring. **This means that the science to underpin our understanding of climate change impacts and thereby guide adaptation is the poorest, where it is most urgently needed.** It can not be overemphasized that an investment in sound research and understanding today, will provide an essential first step towards efficient and appropriate adaptation solutions for the future.

Adaptation responses in all sectors must be guided by sound baseline information such as geophysical, oceanographic, economic, social and climatic data. In order to build and maintain optimum environmental resilience to climate change stress, improved understanding and monitoring of climatic, oceanographic, coastal and hydrological systems, human resource use patterns and settlement patterns must be improved as a matter of urgency.

The early cost of monitoring and developing sound baselines to guide adaptation and develop appropriate options will in the long term, return huge dividends and savings. Alternatively, inappropriate climate change adaptation responses must be prevented as they waste limited resources, may increase social or environmental damage and at worst may contribute to, rather than alleviate human suffering.

Climate change adaptation must be underpinned by several key concepts, which embrace rather than ignore the uncertainty inherent in present understanding of how specific climate change impacts may manifest, and these include the following:

- Developing “no regrets” integrated approaches across all sectors; hazards and risk management and preparedness, resource supply and use solutions, coastal and environmental management, planning and monitoring.
- Recognising that by bolstering resilience to existing needs in such sectors we lay the best possible foundation for more specific future adaptation responses.
- The combination of (1) increased resilience today through a range of integrated “no regrets” approaches, and (2) better resourced, strategic and sustained effort to develop specific understanding of climate change stress in the Pacific Region, will undoubtedly result in the most effective, appropriate and sustained adaptation efforts.





Community Lifelines Programme

SUMMARY OF HIGHLIGHTS

The major achievements of the Community Lifelines Programme including actions under the sectors of Water, Energy and ICT are presented below.

1. WATER, SANITATION AND HYGIENE
2. ENERGY SECTOR
3. ICT, GIS AND REMOTE SENSING

1. WATER, SANITATION AND HYGIENE

The period 2006-2008 has seen increased support for, and intervention in the region's water and sanitation sector. This unprecedented growth has been guided largely by a number of strategic policy instruments developed by the region over the last eight years, through a broad series of coordinated and comprehensive consultations. They include the Pacific Wastewater Policy and Wastewater Framework for Action (2001); the Pacific Regional Action Plan on Sustainable Water Management (2002) and the Pacific Framework for Action on Drinking Water Quality and Health (2005).

Following the development of the mentioned policy instruments Pacific Heads of States recommended in 2006 that water, sanitation and hygiene challenges facing the region be directly addressed under the Pacific Plan through the Pacific Regional Action Plan on Sustainable Water Management (PRAP), providing further political endorsement to this strategy and its companion frameworks for action. This was reinforced by Pacific Leaders attending the Asia Pacific Water Summit on 3 and 4 December 2007, in Beppu, Japan.

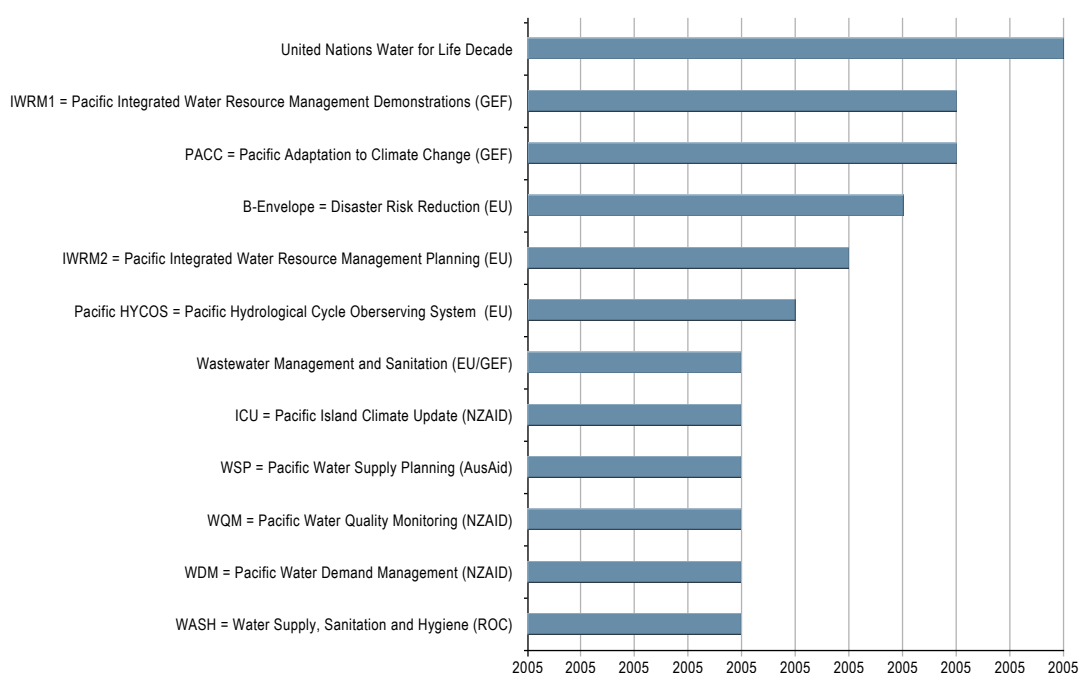
community lifelines programme

The above-mentioned strategies in concert with the Pacific Partnership Initiative on Sustainable Water Management have ensured a more coordinated and strategic approach to water and sanitation activities in the region. The Partnership enables countries and development agencies to: identify successful previous activities and therefore improve the sustainability of subsequent interventions; reduce and prevent duplication of activities; link country requirements to development programmes (and vice versa); and augment existing and proposed activities nationally and regionally.

Through SOPAC's Community Lifelines Programme, Pacific member countries saw increased recognition and support for hydrological and water supply services through, amongst others, the Pacific Hydrological Cycle Observing System (HYCOS) and the Pacific Water Quality Monitoring Programme. Furthermore the region adopted and started to implement relatively new concepts in the region such as Drinking Water Safety Planning (DWSP) and Integrated Water Resources Management (IWRM).

These advances in regional water sector support, totalling a joint budget of over 30 million USD for the next five years, are closely linked to ongoing and planned national developments and associated bilateral support to Pacific member countries' water and sanitation sector (see figure below). These actions should translate into improved management of water resources and increased water quality, access to safe drinking water and access to basic sanitation within the decade 2005-2015, which has been branded by the United Nations as the "International Water for Life Decade".

Pacific Water Sector Support Programmes



The annual incidence of diarrhoeal diseases in the Pacific, nearly matches the number of its inhabitants with 6.7 million cases of acute diarrhoea each year, responsible for the annual death of 2.8 thousand people. Most of these deaths are children who are less than five years old (WHO, 2008). Recent country statistics on access to improved sanitation and improved drinking water reveal that on average, only half of the total population of the Pacific Island Countries are served with any form of improved sanitation or drinking water (UNICEF, WHO, 2008).

Increased efforts are required to achieve the MDG targets of halving the proportion of people without access to safe drinking water and basic sanitation by 2015 as well as the target of developing national Integrated Water Resources Management and Water Use Efficiency plans.

The UN General Assembly declared 2008 as the International Year of Sanitation. They also agreed that there is a need to assist developing countries efforts to prepare integrated water resources management and water efficiency plans as part of their national development strategies and to provide access to safe drinking water and basic sanitation in accordance with the Millennium Declaration and the Johannesburg Plan of Implementation, including halving by 2015 the proportion of people who are unable to reach or afford safe drinking water and who do not have access to basic sanitation.

An indicator framework to guide the monitoring and evaluation in countries will be developed in conjunction with one of the first projects under the Pacific Alliance for Sustainability (PAS) framework through the USD10.7 million Sustainable and Integrated Water and Wastewater Management Programme funded by the of the Global Environment Facility (GEF) and European Union Water Facility.

Regarding wastewater and sanitation, SOPAC is undertaking concerted campaigns to support the provision of financing, marketing, technology and organisational assistance and guidance and to build political will to reach sanitation targets. SOPAC coordinated the establishment of the Pacific Water supply, Sanitation and Hygiene (WASH) coalition. Through partnering with the Water Supply and Sanitation Collaborative Council (WSSCC), the Pacific WASH Coalition supported specific in-country activities on sanitation in Tuvalu and Kiribati and supported the re-launch of the Sanitation Park in Fiji at the Fiji School of Medicine. Under the Global Programme for Action for the Protection of the Marine Environment from Land-based Sources of Pollution (GPA/UNEP), SOPAC provided training on wastewater management in Kiribati and Tonga.

Through the Pacific Partnership Initiative on Sustainable Water Management it also coordinated the review of the Pacific Wastewater Policy and Framework for Action to guide priority actions in the remaining years of the UN Water for Life Decade. SOPAC will continue to monitor the progress in this regard and keep providing support to member countries within the regionally agreed frameworks and through working closely with all members of the Pacific Partnership.

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a. Pacific Hydrological Cycle Observing System (Pacific HYCOS)

Funded through the European Union's Water Facility the Pacific HYCOS Programme is implemented by SOPAC jointly with the World Meteorological Organization (WMO), with UNESCO and the Fiji Meteorological Office as Associate Partners. Pacific HYCOS assists Pacific Island Countries with the collection, storage and analysis of information necessary for water resource management. Individual country implementation plans have been scoped, which identify a common theme of seriously reduced capacity at the national level for hydro-meteorological data collection and storage.

The Project Regional Centre based at SOPAC is now at full strength with a Pacific HYCOS coordinator, two hydrologists, a GIS database specialist and three project officers. To date, Pacific HYCOS has focused on in-country project implementation through installation of new hydrological equipment; provision of a database and GIS training; household surveys of water catchment capacity; and provision of technical support.

Specific in-country activities for the reporting period include the Rewa River flood forecasting system in Fiji, GIS support to rainwater harvesting in Nauru and Tuvalu, rehabilitation of monitoring sites in the Marshall Islands, Solomon Islands and Vanuatu, support to Samoa's Water Sector Support Programme, deployment of loggers in the Cook Islands, groundwater monitoring in Niue, a review of water resources monitoring in Palau and Tonga, data rescue exercises in Samoa and Vanuatu, mobilisation of PACTAM water support officers in Tuvalu and Niue, engagement of hydrological research officers in Kiribati and the Marshall Islands, as well as the purchase of technical support equipment for each of the fourteen countries.

The Pacific HYCOS project coordinated efforts with, and provided support to: the AusAID funded Vulnerability and Adaptation programmes in Kiribati and Tuvalu; the European Union EDF-9 B envelope multi-country project on building resilience to droughts in the Marshall Islands, Nauru, Tuvalu and Tonga; the scoping of European Union EDF10 national indicative programme interventions in the Cook Islands, Fiji, Kiribati and Tuvalu; as well as the development of the Pacific Adaptation to Climate Change programme in the Marshall Islands, Nauru, Niue, Tuvalu and Tonga.

The second project steering committee meeting was held in Niue in June 2008. A key outcome of that meeting included the urgent need to mobilise hydrological equipment in order to generate reliable datasets in countries and continue the building of national technical capacity. This requires further and ongoing political commitment from countries to support National Hydrological Services.



A coordinating mechanism has been developed with other Pacific observing systems such as the Pacific Global Climate Observing System (PI-GCOS), and the Pacific Global Ocean Observing System (PI-GOOS), which are based at SPREP and SOPAC, respectively. In terms of awareness and advocacy, a joint e-newsletter has been released under the banner "Vai Pasifika", a Pacific HYCOS website (www.pacific-hycos.org) has been established, linkages were established with national disaster management committees, high-level meetings were organised with permanent secretaries, and media coverage was arranged to highlight water management issues in various countries.

b. Water Quality Monitoring

The Water Quality Monitoring Project is funded by NZAID and is jointly implemented by SOPAC, WHO and the USP Institute of Applied Science. The main objective of the programme is to build national capacity for monitoring the quality of drinking water, surface water, groundwater and coastal waters.

The programme is currently being implemented in four pilot countries (Cook Islands, Niue, Marshall Islands and Vanuatu) through the provision of basic water testing equipment and in-country training on best laboratory practice. With the support of the WQM programme, the laboratory of the RMI EPA (Environmental Protection Agency) was recently certified by laboratory assessors of the US EPA, under their support programme for EPAs in the North Pacific. In addition an electronic water quality database is currently being developed to assist with better management and analysis of water quality data and results.

Other Pacific Island Countries are being assisted with specific requests under the WQM programme including the sharing of guidelines and establishment of monitoring regimes. Two sub-regional laboratory training courses were held in Fiji and Guam in 2007 attended by laboratory technicians from water utilities and ministries of health.

c. Sanitation Park

The International Year of Sanitation (2008) prompted partners working in the area of water supply, sanitation and hygiene activities in the Pacific region to come together to raise the profile of sanitation. As part of efforts to promote safe sanitation and hygienic practices, the Fiji School of Medicine with support of its Pacific WASH Coalition partners, re-furnished and launched the Sanitation Park at its Tamavua Campus in Fiji. The Sanitation Park Project was initially launched in late 2004 with funding from NZAID. It was designed to provide support to communities and health workers in Fiji and the Pacific region to identify and address their sanitation problems.

d. Integrated Water Resources Management (IWRM)

Whilst many countries have made great progress with regards to realising their national objectives for sustainable development and achieving the Millennium Development Goals (MDGs) and targets, such endeavours have generally been made through sectoral approaches. In doing so the competitive demands of different sectors have become difficult to manage, with increasing stress placed upon water resources as pollution increases and populations continue to grow increasing demand on already fragile water resources.

community lifelines programme

The IWRM Programme provides a cross-sectoral, multi-level approach to water resources management which also provides an entry point to addressing other inter-related sectors such as health and land management. Two projects comprise the Pacific IWRM Programme and include: The Global Environmental Facility (GEF) funded "Sustainable Integrated Water Resources Management Project in Pacific Island Countries" (Pacific IWRM Project); and, the European Union (EU) Funded "IWRM National Planning Programme".

The GEF-funded Pacific IWRM project is being executed by SOPAC and implemented by UNDP and UNEP and includes fourteen Pacific Island Countries. Following a vigorous country-driven and designed project design phase, the project was approved for funding by the GEF in April 2008 for USD10.7M. It will be implemented over the period 2009 to 2013.

Under the project there will be thirteen country demonstration projects (tabulated below), which will focus on the capture and presentation of on-the-ground IWRM interventions. The regional component intends to focus on national policy reform, improved institutional capacity and change, and IWRM indicator development through multi-country collaboration to address regionally-coordinated solutions. It is anticipated that a Regional Project Coordination Unit and national project teams will be in place between October to December 2008 to commence project implementation.

IWRM Main Intervention	Country	Title of Demonstration Project
1. Watershed Management	Federated States of Micronesia	Ridge to Reef: Protecting Water Quality from Source to Sea in the Federated States of Micronesia
	Palau	Ngerikiil Watershed Restoration for the Improvement of Water Quality
	Papua New Guinea	Rehabilitation, Management and Monitoring of Laloki River system for economical, social and environmental benefits
	Samoa	Rehabilitation and Sustainable Management of Apia Catchment
	Vanuatu	Sustainable Management of Sarakata Watershed
2. Wastewater Management & Sanitation	Republic of the Marshall Islands	Integrated Water Management and Development Plan for Laura Groundwater Lens, Majuro Atoll
	Nauru	Enhancing water security for Nauru through better water management and reduced contamination of ground water.
	Tuvalu	Integrated Sustainable Wastewater Management (Ecosan) for Tuvalu
3. Water Resources Assessment & Protection	Cooks Islands	Integrated freshwater and coastal management on Rarotonga
	Fiji Islands	Environmental and Socio-Economic Protection in Fiji: Integrated Flood Management in the Nadi River Basin
	Niue	Using Integrated Land Use, Water Supply and Wastewater Management as a Protection Model for Alofi Town Groundwater Supply and Nearshore Reef
4. Water Use Efficiency & Water Safety	Solomon Islands	Managing Honiara City Water Supply and Reducing Pollution through IWRM Approaches
	Tonga	Improvement and Sustainable Management of Niefu Aquifer Groundwater Resources in Vava'u Islands

This is occurring in conjunction with the EU-funded National IWRM Planning Programme, which will provide policy improvement and institutional support to help PICs in the development and delivery of national IWRM plans in line with the MDG targets. This three-year IWRM Planning programme commenced in 2008, with an Inception Meeting held in Niue during 18-25 July 2008. It will enable Pacific SIDS to develop policy, strategy and actions for water reform for IWRM with National Water Committees being used in each of the countries to help drive the process. Countries are at varying stages of the process of a policy or strategy and the IWRM team is working with countries in identifying key steps in the process that they would like to move forward on.

e. Pacific Water Virtual Learning Centre

SOPAC supported the development of a Post-Graduate Diploma in Integrated Water Resources Management (IWRM), which was first offered to students in 2007. The University of the South Pacific (USP) is collaborating closely with the United Nations University (UNU) who lead the implantation of this pilot phase of the initiative. Coordinated through the Pacific node of the UN Water Virtual Learning Centre and established at USP, it is envisaged that links will be made between it and the mentioned Pacific IWRM programme.

f. Water Demand Management Programme

SOPAC and the Pacific Water Association are implementing the NZAID-funded Pacific Water Demand Management Programme in five pilot countries (Niue, Cook Islands, Solomon Islands, Marshall Islands, Vanuatu and the Federated States of Micronesia). The purpose of the project is to improve the capacity for water demand management in Pacific urban water utilities. In partnership with Wide Bay Water Corporation sub-regional workshops were held in Rarotonga, Cook Islands and Pohnpei, Federated States of Micronesia. In-country support was provided to establish System Loss Management Plans in each of the pilot countries. The programme is assisting the pilot countries to acquire both "hardware" such as water meters, leak detection equipment or bulk water-saving devices for incentive or rebate schemes, as well as "software" which include training, community education materials and technical expertise.

g. Pacific Drinking Water Safety Planning

The Pacific Drinking Water Safety Planning (WSP) Programme is a joint initiative of the World Health Organization (WHO) and SOPAC. It focuses on promoting a risk management approach for the provision of safe water supply in Pacific Island Countries through piloting Water Safety Plans in four countries (Tonga, Vanuatu, Cook Islands and Palau). The programme is funded under AusAID's Water Quality Initiative and is implemented by SOPAC and WHO.



community lifelines programme

The first phase of the programme (2005-2007) focussed on the development of Water Safety Plans for individual urban and rural water supplies. Under the second phase (2008-2010) of the programme, associated improvement schedules will be implemented for various water supply systems including: water supply of Nuku'alofa as well as rural supplies on Tongatapu, Kingdom of Tonga; Luganville and Mele, Vanuatu; Koror-Airai, Palau; and Rarotonga, Cook Islands.

The New Zealand Ministry of Health, through its Pacific Island Countries assistance programme under NZODA funding, is providing additional in-kind support to the WSP programme with the strengthening of the technical aspects of the programme through the mobilisation of New Zealand District Health Board drinking water assessors.

Public awareness programmes were conducted by in-country NGOs including Tonga Community Development Trust (TCDT), the Palau Conservation Society (PCS), Live and Learn Environmental Education (LLEE) Vanuatu and the Ministry of Environment Cook Islands.

Replication of Water Safety Planning is underway in Fiji, Niue, Marshall Islands and Samoa. Based on the lessons learned from the first phase, guidelines have been developed which will be available to guide further application of the WSP concept throughout the region.

h. Wastewater Management Training

A training course for wastewater management has been jointly developed by UNEP's Global Programme for Action for the Protection of the Marine Environment from Land-based Sources of Pollution (GPA/UNEP) and the UNESCO-IHE Institute for Water Education. The wastewater training course addresses one of the guiding principles of the Pacific Wastewater Policy and Framework for Action and is being implemented by a consortium of SOPAC, USP-IAS, IOI, in collaboration with SPREP, UNESCO-IHE, GPA/UNEP and UN/DOALOS. The first series of training courses held in Suva, Guam and Port Moresby have been followed up through additional courses in Kiribati with the Environment and Conservation Division of the Ministry of Environment, Lands and Agricultural Development (MELAD) and the Tonga Community Development Trust (TCDT).

i. Pacific Island Climate Update

The Pacific Island Climate Update (ICU) project is implemented by SOPAC, in collaboration with SPREP and the National Institute of Water and Atmospheric Research, New Zealand, and supported by NZAID (NIWA). The main output of the ICU process is the publication of a monthly seasonal climate bulletin for the Pacific region with a primary goal of assisting SOPAC member countries to make informed planning and management decisions across a range of sectors through the provision of timely and accurate seasonal climate forecasts. The ICU bulletin is published by NIWA both in print and online, and is distributed to end users across the Pacific region.

Since 2006, the ICU project has undergone a series of reviews involving surveys and end user discussions, the purpose being to assess the efficacy of ICU in meeting end user needs for climate forecasting information. The outcome of these reviews can be summarised as follows:

- i. There is broad support amongst Pacific Island National Meteorological Services (NMS) as primary end users of the ICU, for it to be continued.
- ii. The monthly teleconference, the precursor to the production of the bulletin, is an important component of the ICU process by allowing a consensus to be generated on the current and future state of the climate in the Pacific region.
- iii. The monthly bulletin has been successful in raising awareness of climate issues and has met some of the needs of NMSs for climate information, but in general has had less of an impact on secondary end users, such as hydrology, agriculture, fisheries and health,
- iv. The needs of (local) secondary end users would be better served through media distribution by NMSs.

SOPAC recognises the important role of ICU in generating reliable and authoritative climate information of value to end users across the Pacific Islands region, and therefore seeks a continuation of the programme through its ongoing collaborative partnership with NIWA and SPREP. It is recommended that the ICU continues with a view to achieving the objectives shown below:

- i. Increased participation by NMSs in the monthly teleconference through training and attachments at higher capacity NMSs, such as those in Fiji and Vanuatu.
- ii. Greater support to the NMS through assessment of local secondary end users' needs and the production of national climate bulletins designed in such a way to deliver critical climate information of direct benefit to them.
- iii. Continuation of a refocused and streamlined monthly regional bulletin, delivered electronically, that conveys critical climate information to a broad cross section of end users in a non-technical manner.

In conjunction with other partners on climate information such as Pacific, BOM Australia, NOAA and NIWA, SOPAC is evaluating how the above objectives can be met through a new, long-term regional programme.

j. Pacific Water and Climate

Following the outcomes of the Pacific Dialogue on Water and Climate, the Asian Development Bank (ADB) supported the Pacific Resource Centre on Water and Climate to continue "to improve the capacity in water resources management to cope with the impacts of increasing variability of the world's climate, by establishing a platform through which policymakers and water resource managers have better access to and make better use of information generated by climatologists and meteorologists".



community lifelines programme

The Pacific Resource Centre on Water and Climate was instrumental in securing the institutional and financial commitments to implement the Pacific HYCOS project in the Pacific region. The resource centre continued to provide guidance to coping and adaptation to climate change in the Pacific region through advocacy and inputs into global and regional fora such as the Asia Pacific Water Forum, the Asia Pacific Water Summit, and contributions to the 3rd World Water Development Report under the leadership of UNESCO as well as developing a perspective document on “water and climate in small island countries” for the 5th World Water Forum to be held in Turkey, March 2009.

k. Climate and Meteorological Data

Under a joint initiative between SOPAC, SPREP and NIWA and funded by the New Zealand Ministry of Environment (NZMoE) funding support is being provided to rescue, preserve and digitise historic climate observations from small island developing states. Progress to date has been to assess the data available and to provide a listing of daily climatological and rainfall records that are archived in NIWA’s climate database, as well as sites for which daily data are still to be archived. The NIWA climate database has 716 Pacific Island sites of which there are 524 locations where daily observations of weather and climate are made. The “Historical Climate Data in Pacific Island Countries” programme will be implemented over 3 years but this is subject to the availability of funding. The project has identified that the amount of data to be recovered and the time required for its recovery has far exceeded initial project estimates. Consequently, a request for further assistance in the recovery of this data was made to the NZMoE in 2008.

l. First Asia Pacific Water Summit

The First Asia-Pacific Water Summit was held on 3 and 4 December 2007 in Beppu, Japan. It was attended by six Pacific Island Leaders from the Federated States of Micronesia, Palau, Tuvalu, Nauru, Niue and Kiribati, as well as Ministers from Cook Islands, Fiji and Papua New Guinea. SOPAC, as focal point for the Oceania component of the Asia-Pacific Water Forum, provided support to countries participating in the summit and facilitated a special session on water and climate in small island countries.

The large participation by Pacific Heads of State at this Summit was a testament to their strong political commitment to meeting future water challenges and their efforts to cope with an increasingly variable climate, and adapt to the future effects of global climate change.

Attention was raised of the opportunity to mainstream Climate Adaptation, Disaster Risk Reduction and Water Safety Planning into Integrated Water Resources Management. Combined with adequate priority given to water and sanitation in national development plans and strategies, these measures will be the best approaches to achieve the MDG targets of halving the proportion of people without access to safe drinking water and basic sanitation by 2015.

The Pacific Leaders attending the Summit re-affirmed their commitment to accord the highest priority to water and sanitation in their sustainable development plans; improve governance, efficiency, transparency, and equity in all aspects related to the management of water, particularly as it impacts poor communities; take urgent and effective action to prevent and reduce the risks of flood, drought and other water-related disasters; and support the region’s vulnerable small island states in their efforts to protect lives and livelihoods from the impacts of climate change.

m. Niue Groundwater Legislation

Following a groundwater monitoring and management project, UNESCO and SOPAC provided support to Niue to review its Water Resources Act of 1996. New regulations were developed in close consultation with Niue counterparts. The implementation of the proposed legislation will allow Niue to improve the management of their water resources through regulating of water extraction and use, enforce wastage prevention and consider appropriate mechanisms for cost-recovery. These regulations coupled with other initiatives, such as water demand management and awareness on water conservation, will ensure more efficient and consistent supply of water to the consumer and better management of Niue's water resources.

n. Pacific Partnership Initiative on Sustainable Water Management Coordination Unit

The Coordination Unit of the Pacific Partnership Initiative on Sustainable Water Management continued its core functions of: a) Producing quarterly newsletters covering items on Pacific News; Actions; Publications; Multimedia; Websites; and Water Agenda; b) Developing and maintaining the Pacific Water action Matrix; and c) Developing and maintaining a database of member partners contact details. The Partnership Coordination Unit also maintained its pivotal role in the development and implementation of the GEF and EU-funded Integrated Water Resource Management project (2008-2012).

The use of the partnership is a unique model for regional project implementation and members of the partnership are playing active roles either through participation in national activities or regional support programmes. Whereas visible and measurable outcomes such as the newsletters and action matrix have been useful outcomes of the Coordination Unit, the less visible, but arguably more important function of the Partnership has been the increased project coordination and donor harmonisation demonstrated through accelerated progress in implementation of the Pacific RAP through the action matrix.

The Third Steering Committee Meeting for the Pacific Partnership Initiative on Sustainable Water Management was held in Apia, September 2008 and organised in collaboration with the Pacific Water Association (PWA). Besides the review of the Pacific Partnership arrangements, special attention was provided to the topic of wastewater management, sanitation and hygiene. Exactly seven years after the adoption of the Pacific Wastewater Policy and Framework for Action in Majuro, Marshall Islands in 2001, the meeting reviewed the projects implemented and identified further priorities for action.



community lifelines programme

The vision statement of the Pacific Wastewater Policy is to “protect the health of the people and safeguard the fragile islands environment through improved, effective and efficient management of wastewater”. Actions under each of the guiding principles of the Policy and Framework for Action were reviewed including:

- i. National wastewater management policies and regulations will be appropriate and acceptable to the people and cultures of the Pacific Islands.
- ii. Appropriate national institutions, infrastructure and information will support sustainable wastewater management.
- iii. Better access to funding will improve service delivery, and develop the private sector.
- iv. Community participation in wastewater management and sanitation will ensure equitable benefit with recognition of socio-cultural sensitivities.
- v. Viable and sustainable levels of skilled and knowledgeable people within the wastewater sector and communities will improve wastewater management.

o. World Water Day 2008

The International Year of Sanitation guided the 2008 World Water Day campaign. SOPAC and Live and Learn Environmental Education (LLEE), organised activities under the theme “Sanitation for Healthy Pacific Communities” to celebrate World Water Day on 22nd March 2008. Activities included the development of educational materials (special emphasis on hand washing), raising awareness on water and sanitation through the distribution of material throughout the Pacific; and incorporation of water education into school/community programmes through the LLEE programmes of work.

p. Pacific WASH Coalition

As a member of the global Water Supply and Sanitation Collaborative Council (WSSCC), SOPAC has mobilised partners in the region to coordinate activities in the Pacific region on water supply, sanitation and hygiene (WASH) and established the “Pacific WASH Coalition”.

The International Year of Sanitation 2008, created an excellent opportunity to strengthen collaboration between a wide range of regional and international agencies to improve delivery of water supply, sanitation and hygiene activities. Partners in the coalition include the Foundation of the Peoples of the South Pacific International, the Fiji School of Medicine, Live and Learn Environmental Education, the World Health Organization, the United Nations Children’s Fund and the International Federation of Red Cross. Increasing interest in water and sanitation support provided to the region by donors and other organisations resulted in a large number of overlapping interventions. Therefore it becomes increasingly important to ensure that work carried out in this critical area is well coordinated in order to optimise outputs and avoid duplication. The Pacific WASH Coalition is utilising existing partnerships established under the Pacific Partnership Initiative on Sustainable Water Management and is also building on ongoing work programmes and activities in Pacific Island Countries.

WASH activities in line with the International Year of Sanitation included a Training of Trainers workshop on water quality, rainwater harvesting and sanitation and hygiene, school WASH and media campaigns (in Tonga) and a series of school workshops on water, sanitation and hygiene, translation and dissemination of rainwater harvesting manual and media campaign (in Tuvalu).

2. ENERGY SECTOR

a. Energy Assessments

i. Wind Energy

Wind monitoring initiated early in 2007 in Samoa (Upolu), Cook Islands (Rarotonga) and Tuvalu (Funafuti) continued, with the down load of twelve months worth of wind data held on the logger installed in the Cook Islands carried out in July 2008. The wind data was analysed through a joint cooperative effort between SOPAC and UNDP Samoa and results indicate an acceptable wind energy resource; however, the assessment is being refined in anticipation that there may be alternate sites on Rarotonga that would provide a similar resource but less complicated geotechnical conditions that prevail at the current assessed site.

The wind energy project in Mangaia (Cook Islands) was the focus of a full evaluation early in 2007 where detailed cost estimates for upgrading the system, in particular the connectivity to the existing diesel generator grid were prepared. One of the wind turbines has completely failed during operation and technical difficulties with the other turbine raise the question as to the sustainability of the current installation. Mangaia currently has an upgrade project underway that includes 2 new electronic generators, automatic control systems, transformers and a proposed 10-kW solar PV system.

ii. Wave/Ocean Energy

The Société de Recherche du Pacifique (SRP) in New Caledonia continues to work on the development of wave energy within the French Territories of the region. Their request to SOPAC to provide wave energy data acquired under a regional wave energy programme in the 1990's has resulted in SOPAC looking to address the need of transcription of these data into a useable format. Further development of the region's wave energy resources and the demonstration of its applicability will primarily be dependent on the availability of funding resources and commercially-proven technology although technologies that utilise current flow or ocean tidal energy would appear to be progressing ahead of wave energy systems as well as Ocean Thermal Energy Conversion (OTEC). However, within the region OTEC is an optional interest of the government of Palau with a request to the U.S. Trade and Development Agency to fund a feasibility study on an OTEC and fresh water production facility. It is understood that Guam is also considering a similar option.



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iii. Renewable Energy

The implementation of the Pacific Micro Energy Service Companies (PMESCO) project in Kiribati and the Solomon Islands has commenced through a collaborative initiative by the renewable energy and energy efficiency partnership (REEEP) and SOPAC. The project has developed formal partnerships in both Kiribati and the Solomon Islands with existing established energy companies that are serving the rural communities. Contractual agreements are being finalised along with arrangements for the supply of the LED lighting systems. The establishment of the PMESCOs and installation of the 70 lighting systems is anticipated to be completed by the end of 2008.

SOPAC has provided assistance to PICs in the preparation of a number of project proposals related to renewable energy and energy efficiency for submission for funding under the Italian/Austrian Fund being executed through the IUCN Regional Office in Suva. SOPAC is in discussions with the IUCN to gauge technical support and assistance that may be required to implement these project initiatives and particularly those relating to energy policy (rural/legislative/regulatory) that may be linked to these specific areas and developed in support of the implementing components of the national energy policy.

SOPAC is currently establishing details of arrangements that will provide additional assistance and support to address problems that have been encountered in Tuvalu with the operation of a biogas plant installed on Amatuku in April 2007, where a regional biogas construction training programme was funded through the PIEPSAP Project. The training and project were a collaborative effort between the PIEPSAP Project and Alofa Tuvalu, a NGO, whose memberships comprises more than 80% women. As there are similar interests in other member PICs to develop and use biogas as an alternative to kerosene for cooking, it is critical that the design and operational arrangements are resolved before proceeding with the replication of similar biogas installations.

iv. Biofuel

Biofuel energy options for the region continue to remain under consideration by many Pacific Island Countries as the price for a barrel of crude oil continues to increase, with the current price per barrel now substantially higher than earlier predicted increases. SOPAC continues to monitor progress and to distribute factual information on research findings and international development in the sector through its website and e-mail user group list. SOPAC contributes to catalysing these initiatives, providing technical support to member countries and supporting where applicable these initiatives as pilot projects. Activities in the biofuels sector included:



- a. The development and implementation of a pilot biofuel project on the island of Koro in Fiji with a view to producing coconut oil based biofuel as well as small-scale soap and body oil manufacturing activities. This follows a 2007 evaluation of the potential for the biofuel project. Tenders for the coconut processing equipment and the diesel – biofuel engine have been called and installation will commence in the late 2008.
- b. The preparation and planning for a joint SOPAC-SPC technical workshop on biofuels scheduled for late 2008 was in hand. This workshop sought to address the issue of food security in the region as the many Pacific Island Countries move toward considering the alternate fuel and energy options available to them, as a means of addressing the continuing upward spiralling cost of fossil fuels in the region.
- c. The development of a draft biofuels standard has been completed for Fiji. It's finalisation is a matter for the Fiji Trade Standards Advisory Council and the Fiji Department of Energy to progress. It is anticipated that the standard could be used as a basis for other PICs and will specifically contribute to setting national biofuel standards and providing a quality baseline for production of biofuels and increased confidence in engine manufacturers so that engines can be designed to burn these fuel blends in the Pacific.
- d. The provision of technical assistance, as required, to the Fiji biofuels initiative (Fiji Resilience Building Project (Preparatory Assistance Project Proposal – Development of a National Biofuels Programme to Prevent Significant Loss of Rural Employment in Fiji)), an initiative funded by the UNDP under their support for initial in-country activities to promote the establishment of a biofuel industry.

b. Energy Data and Information

The general lack of sound energy data and information for planning and development in many countries remains a concern for a number of PICs. The Secretariat has therefore during 2008 continued to dedicate resources towards the continuing stock take of energy datasets, statistics and information available both regionally and nationally. As part of these activities SOPAC has worked with the PIFS and the PPA in order to aggregate petroleum and utility data and information, respectively. Specific work on datasets for Samoa, Kiribati, Nauru and the Republic of the Marshall Islands has been completed during the period.

c. Energy Efficiency and Conservation – Nauru

SOPAC in collaboration with Live and Learn, and with funding from the REP5 – EU-funded programme, have provided assistance to Nauru in the delivery of an Energy Efficiency Training and Public Awareness Campaign. This activity is part of an overarching project with the primary objective of poverty alleviation through improving access to electricity to ameliorate living conditions. With the specific aim to improve the demand side efficiency of the energy sector in Nauru, the campaign has been structured to: commence an energy efficiency awareness raising and public education programme; and build capacity of local agencies including the training of the Energy Efficiency Officer to carry out energy efficiency programmes such as information dissemination and public awareness activities with energy audits and implementation. More specifically, the campaign will also initiate the development of an outline for an Energy Efficiency Action Plan (EEAP); and conduct energy audits at Government buildings and selected residential houses.

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An economic assessment that considers the opportunity for the introduction of LPG for cooking and other applications as a replacement for the use of electricity generated from fossil fuels has also been completed for Nauru. The economic assessment considers the opportunity cost of establishing an LPG distribution business as part of the study and was specifically linked to the need to reduce Nauru's reliance on imported fossil fuels. The study contributes to providing opportunities for strengthening Nauru's position with respect to energy efficiency and conservation.

d. Solar Cookers – Kiribati, Tuvalu and Niue

SOPAC in conjunction with Ferris University in Japan commenced the promotion of a solar cooker programme that has included the training and demonstration of a range of locally-fabricated and commercially available solar cookers in Kiribati with local women community groups. The objective of the programme is to reduce the reliance on the use of fuel wood for cooking through the use of solar energy resulting in a healthier environment as well as reduced time spent by women and youth collecting fire wood. The Kiribati programme was replicated in Tuvalu in September 2008. The programme included the assessment of the solar radiation and the development of training material. In addition the solar cooker technology was demonstrated at the Climate Change Fair held in Niue at the Pacific Islands Forum Leaders Meeting in August 2008.

e. CROP Working Groups

SOPAC participated in the Energy, ICT and the Sustainable Development Working Groups. The links being developed through the SD-WG with regard to energy and climate due to the cross cutting nature of these thematic priorities are highlighted as a positive development. The updating of the climate change database and the reestablishment of the Climate Change Round Table (CCRT) convened by SPREP in mid-October 2008 are also timely.

SOPAC as Chair of the CROP-Energy Working Group (EWG) has continued to provide secretariat support to the EWG, which include preparation of meeting agendas, hosting the meetings and preparation of meeting records. During 2008 it was agreed that the Chair of the EWG should rotate and membership be further expanded, with SOPAC retaining secretariat functions.

f. Pacific Islands Energy Policy and Strategic Action Planning (PIEPSAP) Project

The Pacific Islands Energy Policy and Strategic Action Planning (PIEPSAP) Project ended in August 2008 after providing assistance to PICs with a range of support based on a menu of service options; however the bulk of the assistance focused on the development of national energy policies including the review of national regulations and legislation where requested. Other activities included the application of GIS and Remote Sensing for asset management for power utilities, support in the review and assessment of wind and hydro resources, and biofuel potential assessment. Continued actions with respect to national energy policies and the development of strategic work programmes will need to be provided by the SOPAC Energy Sector.

g. Tuvalu – Tariff Study

NZD140 000 was provided to the New Zealand Ministry of Economic Development through the Government Agencies Fund to support an initiative with the Tuvalu Electricity Corporation (TEC) to address metering and billing problems, network reinforcement and demand side management that will help TEC to provide a higher quality of electricity services at the lowest cost to consumers. SOPAC has provided support to the TEC in establishing their new electricity tariff and assisting them in setting up the new tariff rates on their computerised billing system including the training of TEC staff on the maintenance of the billing system.

h. e-Parliament

A SOPAC/e-Parliament Secretariat partnership with EUEF support has been formalised to encourage legislators and governments to improve legislation and governance regarding energy including renewable energy and particularly access to energy for the poor. The Pacific legislators will have the opportunity to share and learn from their counterparts in the African and Caribbean regions through face-to-face hearings and teleconferencing. The Pacific will be hosting an inter-regional and regional hearing in 2009 and 2010.

i. Pacific Energy Ministers Meeting

SOPAC has continued to implement energy sector activities based on the matrix developed from the Pacific Energy Ministers Meeting (PEMM 2007) Communiqué and has continued to monitor progress in the implementation of these activities as well as coordinating and providing the necessary reporting for the Pacific Plan Action Committee and CROP Heads meetings. Relevant activities from the Communiqué matrix have also been integrated into the CLP work programme.

SOPAC has commenced the detailed preparations for the 2009 Regional Energy Officials and Pacific Energy Ministers' Meetings scheduled for Tonga during 20-24th April 2009. This has included the provision of support to Tonga in the preparation of a Cabinet Paper, the development of detailed working arrangement, draft programme and a call for papers. The theme for the 2009 meetings is "Strengthening the Fragile Pacific Islands Energy Sector – Addressing energy, economy and environment in a period of rapid change."

j. Backup Power System

SOPAC's backup power system, generator and uninterruptible power supply (UPS) have now been installed and commissioned, hence alleviating the problems caused due to the intermittent power outages experienced previously where significant working time had been lost and equipment damaged. Increased security of data and overall internet communications are also expected as a consequence.



k. Renewable Energy and Energy Efficiency Partnership

SOPAC has continued to work and strengthen its relationship with the Renewable Energy and Energy Efficiency Partnership (REEEP) South East Asia and the Pacific, based on the MoU signed in 2007. This has included the development and funding of a project focused on the establishment of PMESCO for LED lighting projects in Kiribati and the Solomon Islands; and REEEP participating in a recent EWG Meeting.

l. Pacific Energy and Gender Network (PEG)

The Pacific Energy and Gender Network (PEG) continued its activities as outlined in the PEGSAP 2006-2008. The ongoing funding support from the Technical Centre for Agriculture and Rural Cooperation (CTA) based in the Netherlands led to the convening of three sub-regional workshops on gender mainstreaming held in Nadi in March, Federated States of Micronesia in April; and Kiribati in October along with the printing of the 2007 REM and PEMM proceedings. Support from ENERGIA also enabled PEG to participate in the CSD-15 meeting held at New York in February and May. The first issue of the PEG newsletter was published and printed in September, funded through CTA. The Asia-Pacific Regional Energy Programme for Poverty Reduction, through UNDP, also provided financial assistance towards a media advocacy project that led to the mobilisation of additional resources from SOPAC and SPC. This is being implemented in the Solomon Islands and Vanuatu (a video documentary on energy and gender), and awareness raising materials (posters and flyers) in local languages targeting Samoa, Kiribati, Vanuatu and Solomon Islands. Success with these activities has prompted CTA to consider a two-year (2008-2009) funding term for PEG.

m. Energy Mainstreaming

SOPAC in partnership with the PIFS secured funding support from the EDF Regional Technical Facility to assist Kiribati in the development of its national energy policy and action plan. The policy development process embraced the mainstreaming of the energy action plan (with an implementation plan) into the national budget approval process.

3. ICT, GIS AND REMOTE SENSING

SOPAC expertise on the application of ICT in networking; Internet provision support; policy development; databases; Geographic Information Systems, Global Positioning Systems and Remote Sensing (GIS/RS); capacity building; and Free and Open Source Software (FOSS) is well established in the region. An established Pacific-wide network of contacts and a wealth of local knowledge in the Pacific Island Countries is a direct result of years of sustained involvement in this area. This is supported by the e-mail distribution list GIS-PacNet and the PICISOC website. SOPAC has continued to actively participate and contribute to the CROP ICT-WG where the primary focus has been on establishing how to assist the implementation of the Digital Strategy of the Pacific Plan. In addition SOPAC continues to play an active role in advocating ICT in the region through PICISOC (Pacific Chapter of the Internet Society) especially at the recent PICISOC ICT conference PacINET 2008, in Rarotonga, Cook Islands.

SOPAC continues to gather detailed baseline ICT information to assess the status of ICT development in member states. SOPAC has conducted ICT assessments, as part of the e-Readiness Assessment of Nauru, Kiribati and the Republic of the Marshall Islands and continues to provide policy advice with respect to the development of ICT policies (Tonga – Ministry of Lands; Federated States of Micronesia – Department of Communication, Infrastructure and Transportation).

a. GIS/RS in the Region

Of particular note over the years is the growth in the use of Remote Sensing (RS) and Geographic Information System (GIS) tools for mapping, resource assessment and asset management in the Pacific. SOPAC continues to strengthen its GIS and Remote Sensing service unit capabilities which include image data purchase, advice on available and the most applicable image data for a variety of applications and image pre-processing. Activities include those listed below:

- Scanning of large maps and backdrop production.
- Scanning of aerial photograph negatives.
- Advice on availability and suitability of image data.
- Image data purchase.
- Image conversion from 16-bit raw images to 8-bit image backdrops.
- Image stitching.
- Image mosaicing where the image tiles are joined together.
- Atmospheric correction and haze removal.
- Image contrast enhancement.
- Geometric correction.
- National capacity development in GIS/RS.

In recognition of the usefulness of GIS and RS as key mapping tools a regular audio conference has now been established between SPC and SOPAC to coordinate GIS and Remote Sensing activities. This initiative followed an invitation to the SOPAC GIS specialist to attend a population workshop in Noumea. This collaboration has further raised opportunities for the purchase of image data jointly through SOPAC for SPC.



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SOPAC assisted in convening the Annual Regional GIS&RS User Conference since its commencement in 1998. Held in Fiji at the University of the South Pacific this is the only platform of its kind in the region for dialogue, discussion and the sharing of ideas between the GIS users, application and software developers and others interested in the GIS/RS community. Two hundred participants from twenty countries attended the 2007 conference.

Given its applicability in a wide range of tasks across SOPAC work programmes as well as within the membership, SOPAC has continued to assess the use of newer GIS/RS technologies and tools within the region. Recent applications include those listed below:

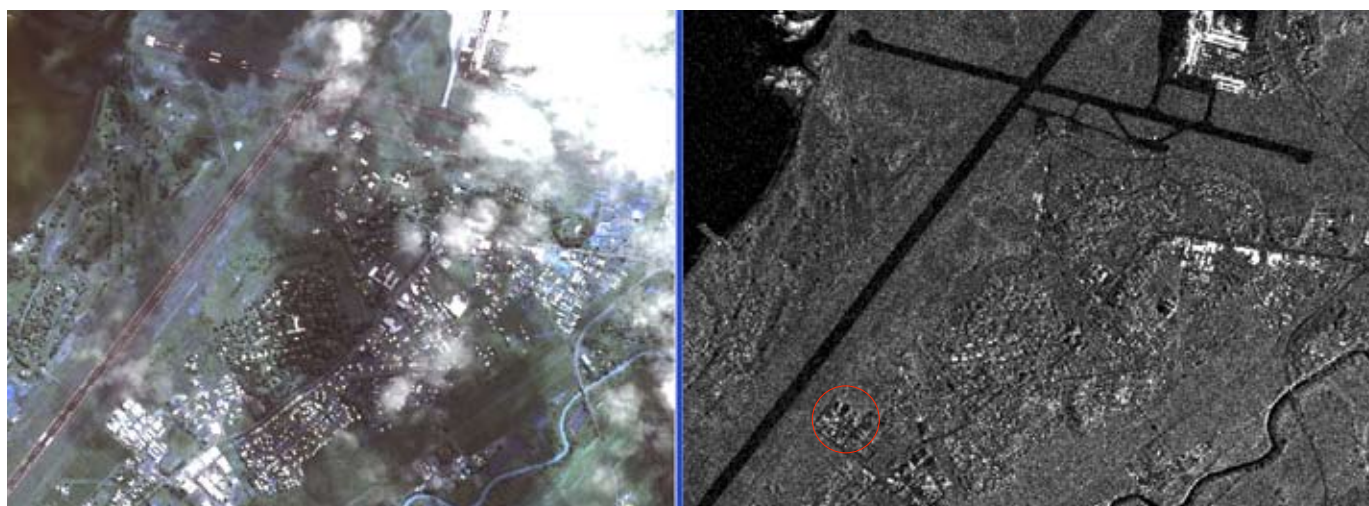
Digital Elevation Models (DEM) – SOPAC has developed a technique to establish digital elevation models at the finer scale to monitor beach erosion. Real Time Kinematic (RTK) GPS together with remote sensing software has been used to build a DEM with 200 mm contour lines at Laura, on Majuro, Marshall Islands. Re-survey at later dates would allow an accurate assessment in terms of volume of material lost (or gained).

High-resolution Radar Data – The use of satellite-borne radar imagery for rapid assessment of extreme events given its cloud penetration capability and ready availability via the Internet within twelve hours of capture is being trialled.

Geo-referencing Satellite Imagery – Developing a methodology to establish Reference Image Points (RIPs) at key locations to more accurately correct satellite imagery collected over an area.

Water Catchment Monitoring – A methodology was developed by SOPAC to convert contour lines available in digital format to digital elevation models (DEM). This was further enhanced through establishing a method for overlaying other information such as land use, population data and soil information. The method was tested on water catchments in the Solomon Islands and is now available for replication in other Pacific Island Countries (PICs).

Shallow Water Bathymetry – SOPAC is developing a capability to acquire shallow water bathymetry, where the combination of blue and green image channels is utilised to produce a digital elevation model of the sea bed. This method shows promising results up to 10m water depth. This will fill the data gap which the multi-beam mapper cannot collect in shallow water and the coastline.



GIS for Asset Management – The application of GIS and Remote Sensing as a tool for asset management continues to be progressed with assistance provided to Tuvalu and Samoa. It is proposed that this management tool will be replicated in a number of other utilities in the coming months. SOPAC also attended the Pacific Power Association (PPA) Conference in August 2008 and presented an overview of the asset management system that has been developed and installed in utilities to date. It is anticipated that the direct benefits able to be gained from the development of such a management tool for utilities cannot be understated and a number of requests have already been received for assistance.

b. Geospatial Content Management Server/MapServer

Deployment of the Geospatial Content Management Server (GeoCMS) continued in the Federated States of Micronesia, Niue and Palau under the EDF9 component of the Reducing Vulnerabilities Project. In Nauru the MapServer was relocated and upgraded together with additional training for Government on server fundamentals.

Support for servers installed under the project continues to be provided including upgrades to earlier systems installed under the EDF8 component. SOPAC is currently working on describing procedures to export some of the data to recreational GPS as well as to Google Earth.

c. Technical Assistance/Support

Technical assistance was provided to PICs and Fiji-based missions with ICT-related issues (ISP strengthening; LAN/WAN deployment; equipment selection, and deployment); and more specifically the provision of technical assistance and support to utilities in GIS and Remote Sensing, including the provision of information and the procurement of data and satellite imagery. SOPAC acquired high-resolution satellite imagery for the following countries: Kiribati, Papua New Guinea, Cook Islands, Tuvalu, Fiji and Marshall Islands.

d. Cross-sectoral Applications of ICT

i. ICT & Education

SOPAC, with assistance from ISOC through PICISOC, are developing educational information brochures and posters about the Internet for new and potential Internet users with special emphasis on students. The brochures and posters are scheduled for publication later this year and expected to be distributed to schools in PICs in the latter part of 2008.



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ii. Internet Society

SOPAC is an active supporter of the Internet Society, an organisation with chapters in more than 120 countries, with high profile members who help shape the Internet of the future. It is important that the Pacific Islands and the region are recognised for its specificities at the global level, if the Pacific wants to enter fully in the Internet age and share in economic development opportunities.

iii. Free and Open-Source Software (FOSS)

SOPAC continued to advocate FOSS by actively participating and taking a lead role in Pacific Islands node of the International Open Source Network (IOSN-PIC). SOPAC organised, with assistance from IOSN-PIC, two sub-regional Linux workshops in Tonga and Kiribati. SOPAC also conducted additional FOSS in-country workshops for policy makers in Niue and Kiribati. The workshops were held jointly with the e-Readiness missions to these PICs.

iv. SOPAC ICT Structure

An internal review of SOPAC's information technology and communication (ICT) sector has been undertaken aimed at evaluating its external outreach/information management support as well as its internal service support role to the Secretariat. As a result, an ICT Strategy has been drafted to address the issues identified and to leverage the Secretariat's strengths in ICT. As part of the ICT Strategy, the ICT organisational structure has been reviewed. This new structure is envisaged to facilitate and enable the successful delivery and implementation of the ICT Strategy.

v. Pacific Plan and the Digital Strategy

Sensitising Pacific Islander leaders to the benefits and obstacles facing development and adoption of ICT has been identified as a key activity for implementation of the Pacific Plan and Digital Strategy (PPDS) and overall ICT development. In supporting the PPDS SOPAC jointly hosted with ESCAP Asia Pacific ICT Center (APCICT) a workshop on Academy of ICT Essentials for Government Leaders (referred to Academy hereinafter) in Cook Islands from 2nd – 5th September 2008. The Academy aims to equip policy makers and government officials with the essential knowledge and skills they need to fully leverage upon opportunities presented by ICT to achieve national development goals. SOPAC will be hosting the Academy for PICs and is planning on rolling this out to some of its member countries.

vi. Regional/International Networking/Security

SOPAC participated in the Seoul OECD ministerial meeting on the Future Economy. It represented the views of the Pacific Islands and reported back to the Pacific Islands what are the challenge and initiative that needs to be undertaken to harness the future Digital economy. One of these challenges is to deploy the new generation Internet IPv6 where training will be sought through a specific meeting in New Zealand and presentations at the PICISOC – PacINET 2008 Meeting.

SOPAC has been working with stakeholders in Fiji and with the Australian Government to raise awareness about Digital Disasters and cyber security. SOPAC is currently helping the possible creation of a Pacific Computer Emergency Response Team (Pacific CERT). This activity would benefit from SOPAC expertise and mandate in Disaster Management and Infrastructure via the Community Lifelines Programme.

NEW AND EMERGING ISSUES

1. WATER, SANITATION AND HYGIENE

a. Reducing water-borne diseases

Pacific Leaders attending the Pacific Water Summit organised for 3 and 4 December 2007 in Beppu City, Japan, re-affirmed their commitment to accord the highest priority to water and sanitation in their countries' economic and development plans. They also agreed to improve governance, efficiency, transparency, and equity in all aspects related to the management of water and, particularly in relation to how water and sanitation impacts upon their poor communities.

For the immediate future and taking into account the world commitments with regard to the UN International Year of Sanitation (2008), as well as the great and critical needs relating to sanitation and drinking water development in the Pacific Islands region, there is and will be a need to develop specific, strategic instruments to advance the sanitation and drinking water agenda in Pacific Island Countries.

The Policy Brief, prepared by the Asia Pacific Water Forum Secretariat and adopted at the Summit, gives special recognition to the isolated nature of small island developing states (SIDS) and calls for increased regional cooperation to share knowledge and build capacity in order to address challenges common to many island nations.

b. Adaptation to climate change – Water Sector

In addition to health issues, which can be linked to the lack of access to water supply, sanitation and hygiene, the Pacific is facing increased risk to natural disasters such as floods, droughts, tsunamis, windstorms, landslides, storm-surges, water-born diseases and epidemics such as dengue and typhoid. It is becoming evident that water-related disasters will be a key area of focus for attention in PICs when they are preparing to adapt to changing climate.

The Pacific RAP clearly recognises that in order to reduce the vulnerability to climate change, a shift is needed from simply responding to water-related disasters, to assessing and managing risks as part of long-term, integrated national strategy for water resources management, where different sectors of government and civil society join forces and work together in a coordinated manner.



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A policy brief by the Global Water Partnership (GWP) on climate change adaptation considers that the best approach to manage the impact of climate change on water, is guided by the philosophy and methodology of Integrated Water Resources Management. Furthermore the GWP recognises that in addressing water shortages, as much attention should be given to managing demand as to increasing supply, by introducing more efficient technologies as well as promoting a culture of water conservation. The Pacific RAP provides the holistic framework for an integrated approach that encompasses both coping with climate variability (flood and drought forecasting and management) as well as adaptation measures for future climate change (planning).

c. Resourcing Water Resources Assessment and Monitoring

Two thematic areas of the Pacific RAP (Water Resources Management and Island Vulnerability) specifically call for increasing water resources management capacity, in particular with respect to the intrinsic vulnerability of small island states to climatic extremes (both droughts and flooding), ENSO events and cyclones. Both themes explicitly state that the Pacific Hydrological Cycle Observation System (HYCOS) programme should be implemented as a priority. Following a successful bid to the ACP-EU Water Facility, the European Union (EU) signed an agreement with SOPAC to fund the programme for the period 2006-2009.

The establishment of the Pacific HYCOS marks the culmination of a long period of planning and advocacy for strengthening of the human and technical capacity of National Hydrological Services (NHSs) in PICs with the ultimate objective to “promote and facilitate the collection, exchange, dissemination and use of water-related information, using modern information technologies”.

Pacific HYCOS will help ensure that the data collected is of improved quality and easily accessible to all users, primarily via the Internet. To achieve this, the project is expected to reinforce hydrological observing networks, facilitate the development of national and regional databases, promote regional cooperation and organise training programmes.

Whilst Pacific HYCOS has a three-year project life, ultimately the aim of the project is to set up a sustainable hydrological data collection system within member countries. This means long after the Pacific HYCOS initiative closes its resource support to Pacific ACP countries, the national water agency in each country will have an adequate annual budget or/and available resources shared with partners/stakeholders to collect reliable hydrological data; however, the



sustainability of these hydrological observing networks is being threatened by lack of basic equipment and technical support available from government departments such as adequate vehicles to visit remote sites and trained personnel to carry out the work. NHSs often do not attract significant amounts of resourcing for operational maintenance and surveys nor do they enjoy the necessary recognition and commitment of their senior officials and policy makers that their services are absolutely critical to adapting to a fast changing environment and to ensuring easy access to adequate and quality water resources for their economies and peoples.

A communication strategy has been developed by Pacific HYCOS to generate the required support from politicians, permanent secretaries and partners/stakeholders for sustainable hydrological data collection in the participating countries.

2. ENERGY SECTOR

a. Coordination and Implementation Mechanisms

Globally over the past twelve months the continued rise in the cost of petroleum products would most certainly need to be taken as a serious indicator that the energy sector needs to be accorded a higher level of attention as prices are likely to remain very high and volatile for the foreseeable future. This has serious implications for Pacific Island economies, constraining economic growth and development prospects, and in some cases eroding or wiping out recent socio-economic gains and possibly threatening stability. There will be a continuing, and likely growing demand for advisory services to the Pacific Island Countries to assist them to deal with energy issues.

In light of this, and the priorities accorded to energy by the Energy Ministers and PIF Leaders at the PEMM in 2007 and the 38th Pacific Islands Forum, respectively; an independent study has been commissioned to review the current status of the energy sector in the region and suggest ways to strengthen and enhance the existing regional arrangements with respect to regional energy coordination on renewable energy and energy efficiency/conservation. This would support the coordination and implementation of activities such as the proposed work under the European Union's EDF 10 National Indicative Programme and of other regional activities proposed or under implementation from various agencies such as SPREP (PIGGAREP) IUCN (Italian and Austrian RE initiative), PPA (EU-PPA Renewable Energy initiative), WB Sustainable Energy Financing and the GEF (GEF PAS).

A draft report has been received and has been distributed for comment and consideration for implementation over 2009 and beyond.

b. 2009 Energy Ministers' Meeting

Pacific Leaders at the 38th Pacific Islands Forum (Nuku'alofa, Tonga) October 2007 stressed the need for continued high-level support to address the region's energy needs. Further the Forum Leaders in their Vava'u decisions on the Pacific Plan in relation to energy, "Committed their Governments to implementing the Pacific Energy Ministers' Communiqué" and noted that a further Ministerial meeting would be valuable, proposing "that the Pacific Islands Applied Geoscience Commission (SOPAC) convene this in 2009 with the next Energy Officials' Meeting".

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Detailed planning and preparations were undertaken for the 2009 Regional Energy Officials' (REM) and Pacific Energy Ministers' Meetings (PEMM) scheduled for Tonga from the 20th to 24th April 2009. This included providing support to Tonga in the preparation of a Cabinet Paper, the development of detailed working arrangements, preparation of a draft programme and a call for technical papers. The theme for the two meetings is "Strengthening the Fragile Pacific Islands Energy Sector – Addressing energy, economy and environment in a period of rapid change."

c. Energy in the 39th Forum Leaders' Communiqué

At the 39th Pacific Islands Forum, Leaders acknowledged that to move the Pacific Plan forward there needed to be a number of key commitments made. This included "energy", which receives specific reference in the section on "Food and Energy Security" reflecting the inter-linkages between food security and energy security. Within this context Leaders highlighted two alternate options deemed viable for assisting in addressing the energy issues, namely improved energy efficiency and the greater use of renewable energy. "Bulk Procurement" still remains a priority initiative for Leaders who instructed that urgent action and attention be accorded to this priority. Other areas of note were the need for reliable infrastructure that primarily supported all the utility sectors, including energy. In acknowledging the Pacific Island Energy Ministers' Communiqué and its eleven key areas and the challenges faced in implementing these, Leaders "tasked the Forum Secretariat and SOPAC to develop a regional Energy project to be funded under the EDF10 Regional Indicative Programme."

3. ICT, GIS AND REMOTE SENSING

a. Pacific Plan and the Digital Strategy (PPDS)

A Forum ICT Ministerial meeting was tentatively scheduled for March 2009 to evaluate the progress of the implementation of the PPDS. SOPAC has continued to support the implementation of the Digital Strategy by actively participating in the CROP ICT Working Group and the Communication Ministers' Task Force, and addressing specific focus areas outlined in the Wellington Declaration. The e-Readiness assessment of the PICs is near completion with SOPAC completing the assessment of nine PICs – Tonga, Tuvalu, Niue, Palau, Federated States of Micronesia, Cook Islands and Kiribati (with PITA), Republic of Marshall Islands and Nauru (with PIFS) with the assistance of UNDP. SOPAC has also continued to actively promote and assist the development of appropriate ICT strategies and policies through its outreach activities including the development of a draft National ICT Policy for the Federated States of Micronesia as part of its contribution to the PPDS.

The emerging focus areas, in addition to those in the Wellington Declaration, include digital content, ICT for Development (including Education and Health), Internet security, and ICT governance.

At the 39th Pacific Islands Forum in Niue, Leaders acknowledged that to move the Pacific Plan forward there needed to be a number of key commitments made. This included reaffirming the continuing importance of information and communications technology as a regional priority.

i. e-Parliament: ICT Access for the Poor

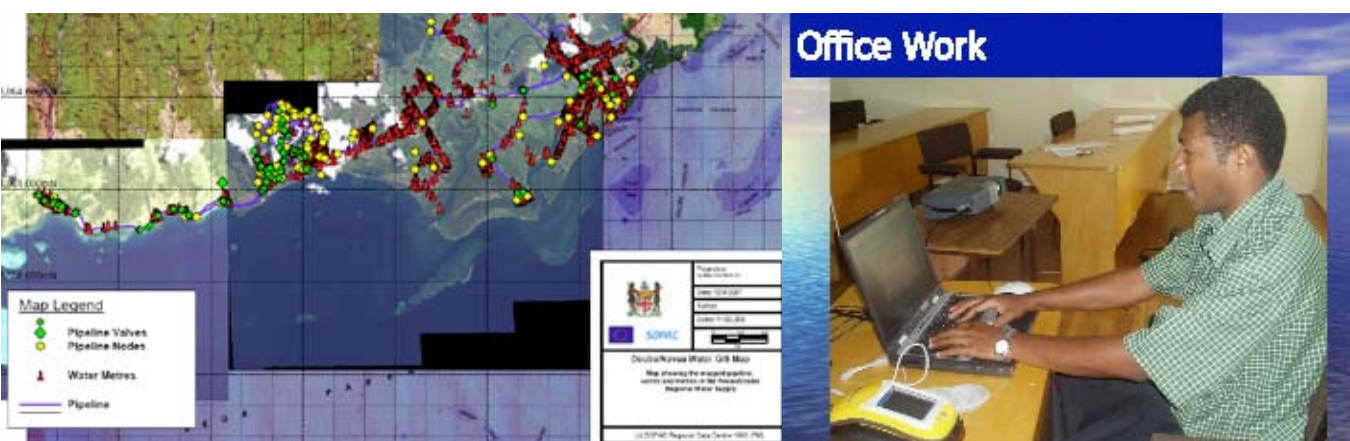
SOPAC has submitted an application to the Africa, Caribbean and Pacific (ACP) Secretariat in response to their @ICT-Programme call for proposals. The proposed project objective is to improve access to ICT services for the poor, including rural and remote island communities, by improving and adopting relevant government policy and legislation, and increasing government resources for this purpose. The target group are parliamentarians and those responsible for making laws (legislators). This project mirrors the project e-Parliament: Energy Access for the Poor where SOPAC is the Pacific partner. Both projects aim to engage and inform parliamentarians to champion ICT and Energy issues.

b. GIS and Remote Sensing (GIS/RS)

SOPAC has been actively engaged in assisting member countries in the development of GIS applications in relation to mapping. GIS applications are of particular benefit in the management of spatial datasets and the process has been enhanced by the availability of new and readily available satellite imagery, at reasonable cost. Such imagery has been used in the management of utility assets, water catchments, hazard mapping, as well as for detecting spatial and temporal changes on coasts and shorelines. GIS/RS has gathered momentum and matured under the EDF 8 & 9 funded Reducing Vulnerabilities of Pacific ACP States Project (2003-2009); and are tools of choice by technical professionals in member countries as well as being widely used in all three programmes in SOPAC.

It is envisaged that over the next few years additional satellites will be in space providing image data for more specific applications. It is expected (overall) that image data will become more affordable and will be of better quality. Increasingly SOPAC serves as a utility or GIS/RS service centre for the region (and member countries) supporting the ordering and pre-processing of image data, training in their use including the development of newer applications, processes and methodologies. Typical services include but are not restricted to:

- image data purchase and pre-processing;
- haze removal;
- atmospheric correction;
- scanning of A0 size maps;
- scanning of aerial photo negatives;
- establishment of digital elevation models (DEM); and
- GIS development for utility asset management.



community lifelines programme

Growth and ease of access to imagery and tools like Google Maps will result in the growth of new applications and for SOPAC this means the need for additional hardware, software and human resource capacity within the Secretariat both to service requests and for internal needs as GIS/RS use within all programmes continues to rise as an imperative to most of the work that is undertaken. Whilst SOPAC's role as a hub or GIS/RS service centre has grown over the years, this has been piecemeal and project centred, and it is suggested that this needs to be formalised and adequately resourced to become a centre of excellence in this area.

c. Methodology Development

As part of SOPAC's GIS and Remote Sensing activities there has been a significant level of effort expended in the development of new methodologies that would allow better utilisation of existing satellite imagery and data to enhance the services, support and products that SOPAC can deliver to its members. These developments are listed briefly below and become part of the tool kit available for use both in country and across SOPAC's technical work programmes. It is anticipated that as these are utilised there will be the ongoing identification of areas where the development of additional new methodologies would further enhance SOPAC work applications at regional and national levels.

i. Radar Data Analysis for Mapping Flooded Areas and Coastal Monitoring

A process where "Radar Data" is ordered immediately after an extreme event and is made available soon after in order to expedite a cost-effective option for the assessment of damage in areas where normal access may not be possible due to such aspects as damage to roads and/or flooding. Radar data is provided by the satellite TerraSAR-X up to 1-m resolution, where the sensors can record data through thick cloud cover, which are normal conditions during a cyclone. The use of this application allows for mapping to 1:10,000 and can be available twelve hours after recording.

ii. Establishment of Reference Image Points

A process that contributes to the geometric quality of high-resolution image data such as that available from QuickBird image data, providing the basis for image analysis at 1:5000 scale and where a RIP must have an accuracy in decimetre range, requiring survey grade GPS equipment and specific data analysis procedures. In this procedure RIPs of known coordinates (X, Y and Z) are also visible in the image hence allowing these to be aligned with the geometric points and tied into the global geodetic coordinate grid. This application was successfully tested during a survey at Laura in the Republic of the Marshall Islands.

iii. DEM Establishment with Sub-metre Contour Line

A process for developing a Digital Elevation Model (DEM) that provides a basis for monitoring change, which is a particularly relevant application for monitoring coastal or shoreline change. Using RTK GPS survey, a DEM can be created with required sub-metre contour lines. A re-survey after one or two years or directly after the visible impact of a storm allows the respective DEMs to be compared and the impact assessed. As an example this could be a quantitative figure of cubic metres of sand washed away or eroded. The method was tested under field conditions in the Republic of the Marshall Islands where it was possible to establish a DEM with 200 mm contour lines. Applications range from accurate measurements of coastal change to DEMs for tsunami or storm-surge modelling.

iv. Shallow Water Bathymetry from Satellite Imagery

A process for creating bathymetry or more typically sea bottom topography of shallow (less than 10 m depth) lagoon areas from satellite imagery through the use of standard software such as ERDAS, Microsoft Access and ArcGIS. The methodology currently being developed by SOPAC was used in physical habitat mapping in the Aitutaki Lagoon in the Cook Islands where the results were promising.

d. Internal Review of the SOPAC ICT Sector

A proposed structure for SOPAC's information technology and communication (ICT) sector was developed based on an earlier internal review (2007). Draft position descriptions were also prepared. In parallel, significant work was carried out on the development of an overall ICT Strategy for SOPAC, which would be supported by specific sub-ICT sector guidelines for the key output areas. In addition, a separate strategy for "Information Management" for the entire SOPAC Secretariat was also prepared, pending implementation. The Information Management System is to be based on an information network that would have the capacity to "share a transparent, reliable, integrated, secure, personalised, knowledge-based and business-driven surrounding".

To progress the implementation of the ICT revised structure the position of the ICT Leader was finalised. It was proposed that the ICT Leader would review the recommended structure and ICT arrangement/requirements for member PICs (outreach) and the Secretariat (service support) so as to ensure an optimal arrangement that accounts for the more recent changes, developments and needs of the region; and the SOPAC Secretariat is realised.

It was further highlighted that the need still remained for ongoing financial support in particular for ensuring continuity in the provision of assistance to PICs in maintaining their GeoCMS (Map Servers) in the population and management of information and data, and in the area of GIS and Remote Sensing. These would be utilised nationally and also continue to be required across the three SOPAC technical work programmes.

RIP at 1:5,000 Scale



Flagpole base as RIP





Community Risk Programme

SUMMARY OF HIGHLIGHTS

Highlights from Community Risk Programme activities in the period 2007/2008 are reported below.

a. Development and Implementation of Disaster Risk Management National Action Plans

A major focus over the course of 2007 and 2008 has been to continue the effort to adapt the Pacific Disaster Risk Reduction and Disaster Management Framework for Action 2005 – 2015: Building the Resilience of Nations and Communities to Disasters (Regional Framework) at a national level within member countries. In February 2006 the Secretariat facilitated the establishment of the Pacific Disaster Risk Management Partnership Network (Partnership Network) which agreed at its inaugural meeting to support the development and implementation of DRM National Action Plans (NAPs) for Pacific Island Countries.

NAPs have been developed for Vanuatu and the Marshall Islands in 2006/2007 and over the course of 2008 support has been provided to Samoa and the Cook Islands. Given the promulgation of Samoa's National Disaster Management Plan in 2006, the Samoa NAP exercise comprised two components. First, SOPAC and partners would assist the implementation of elements of the NDMP that need to be addressed. The second phase of NAP implementation would include activities that would evolve from the implementation process of the NDMP implementation.

The NAP exercise for the Cook Islands commenced in April 2008 and a first draft was completed in June. SOPAC and other partners expected to finalise the NAP with Cook Islands officials in late September and this be submitted to the National DRM Council and Cabinet before the end of the year.

The NAP process in the Solomon Islands was expected to commence in November 2008 and discussions with Papua New Guinea are on-going, with the delay in relation to their NAP commitment was being addressed.

The Partnership Network continued to be a critical element in terms of the realisation of DRM initiatives linked to NAP exercises for other risk reduction and disaster management related activities. Other Pacific countries have informally sought support for NAPs and CRP, working with members of the Partnership Network, would schedule these over the course of 2009. Overtures were received from Palau and Fiji.

b. Implementation of European Union EDF 9 Project: Reducing Vulnerability in Pacific ACP States

The EU EDF 9 Project: Reducing Vulnerability in Pacific ACP States draws to a close at the end of December 2008. Over the course of late 2007 and 2008 CRP has assisted the implementation of the initiatives listed below:

- Development of environment regulations in support of the new coastal development policy for Alofi Terrace in Niue.
- Review of the Palau National Disaster Plan.
- Capacity building in geodata management for Disaster Risk Reduction and Disaster Management – Palau, Federated States of Micronesia and Cook Islands.

In addition to the technical support provided for the above projects, CRP also collaborated with the Senior Resource Economist (OIP) in relation to the development of:

- the economic assessment of flood management options for the lower Vaisigano catchment, Apia, Samoa; and
- the economic analysis of flood warning in Navua, Fiji.

The Senior Resource Economist provided further support to CRP prior to the end of 2008 through an economic/institutional analysis of the Melanesian Volcanological Network.

c. Implementation of European Union EDF 9 B Envelope Multi-Country Project: Support to Disaster Risk Reduction in Eight (8) Pacific ACP States

This was raised as a New Initiative for CRP at the SOPAC 36th Session and is a mechanism which allows eight Pacific ACP states to utilise their remaining EDF B-Envelope funds in a multi-country project aimed at building or strengthening national actions to reduce vulnerability to natural disasters. The total overall funding for this project is €9.2 million over four years from 2008.

The eight participating countries are: Federated States of Micronesia, Marshall Islands, Nauru, Palau, Papua New Guinea, Solomon Islands, Tonga and Tuvalu. The project purpose is to develop and strengthen selected communities in either access to safe drinking water, or in the area of emergency operations/communications.

The project commenced in the first quarter of 2008, with actions to support the acquisition of rainwater harvesting tanks for Tuvalu immediately following signature and inception of the project. This was facilitated with technical support from the Community Lifelines Programme (Water and Sanitation) and was undertaken prior to the appointment of a Project Manager and Project Engineer.

community risk programme

A Project Manager and Project Engineer were appointed on the 1st July 2008. Over the course of July to September both have undertaken inception missions to the following countries: Tonga, Marshall Islands, Federated States of Micronesia, Palau, Papua New Guinea and Solomon Islands. The intention of these visits is to confirm B Envelope priorities with the relevant national agencies and to commence operational planning for project implementation.

The results projected for 2008 are listed below:

1. Specialist technical assistance recruited.
2. Finalise Country Implementation Plans (CIPs) during the project's inception phase.
3. Commence implementation of project actions in the Marshall Islands, Palau, Solomon Islands and Tuvalu.
4. Regular reports and acquittals prepared and submitted to appropriate authorities.
5. 2009 Work Plan and Budget finalised.

d. Melanesian Volcanological Network

The Melanesian Volcanological Network was discussed as a New Initiative during the SOPAC 36th Session. The MVN is envisaged as a framework for the exchange and sharing of resources (equipment and technical personnel) between the three Melanesian countries (Papua New Guinea, Solomon Islands and Vanuatu), in order to mitigate the impact of volcanic disasters. It will focus primarily on raising the awareness of the threat of volcanic hazards, particularly at the community level; on working with communities in planning to cope with volcanic crises and disasters; on deploying volcano-monitoring equipment within the sub-region during times of crisis; and on professional development and exchange of volcanological personnel.

The MVN will be underpinned by an agreed set of procedures, guidelines, and protocols. In addition, an integrated accountability structure will assist and monitor the proposed joint work on disaster mitigation and preparedness throughout the sub-region, as well as during crisis periods when volcanoes show signs of unrest and possible eruptive activity. The Network will provide a guiding framework for individual national initiatives to reduce volcanic risk, rather than being a substitute for them.

The MVN concept was presented to the Melanesian Spearhead Group meeting conducted on 26th May 2008. At the meeting, it was proposed that SOPAC work with representatives from Papua New Guinea, Solomon Islands and Vanuatu to progress the development of the Network. Accordingly, SOPAC met with country stakeholders in Honiara on 3rd - 4th September 2008 to develop the basis of an operating framework for the Network and convened a Donor Roundtable meeting on 5th September 2008 to enable potential country stakeholders and donors to discuss key principles and operations for the Network. Issues for consideration in the Donor Roundtable included:

- financial operations (funds and asset management, accountability and others); and
- donor support for the Network.

e. Regional Early Warning Strategy (REWS) – Implementation

The implementation of the REWS which was endorsed by the Governing Council at the SOPAC 36th Session was being addressed through mechanisms such as:

- Programming of activities into the CRP Work Programme where relevant.
- Incorporation of activities into country processes through the National Action Plan processes.
- Implementation through arrangements with regional and international partner organisations.

The REWS will need to be addressed through a separate and deliberate implementation approach if further success is to be achieved. In this connection a significant effort will need to be made to incorporate the strategy into the country NAP processes, which would help to ensure that at the national level some of their key concerns are factored into the consultative process. The process in turn would involve a range of stakeholders to help ensure ownership and sustainability of recommended activities over the longer term in each country.

At the regional level there is a need to consolidate partner involvement to implement the strategy. This could be achieved to a significant extent by developing an 'early warning' cluster of relevant organisations within the framework of the Pacific DRM Partnership Network to address the specific activities. The cluster approach for early warning would be consistent with efforts already underway in terms of a cluster for humanitarian and emergency response which is being spearheaded by the United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA).

f. Australian Tsunami Warning System – National Capacity Assessment: Tsunami Warning and Mitigation Systems

The Bureau of Meteorology, in partnership with Geoscience Australia and Emergency Management Australia, was provided \$68.9 million funding over four years by the Australian Government to establish the Australian Tsunami Warning System (ATWS).

The policy objectives of the joint-agency ATWS project are:

1. to provide a comprehensive tsunami warning system for Australia;
2. to support international efforts to establish an Indian Ocean tsunami warning system; and
3. to contribute to the facilitation of tsunami warnings for the South West Pacific.



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The project aims to work with and enable SOPAC Member Countries to assess their ability to receive, communicate, prepare for, and respond to, tsunami warnings. The project will help to identify requirements for further capacity building programmes and assist in directing funds from various potential sources to address these requirements.

As at August 2008 capacity assessments had been conducted in the Cooks Islands, Fiji, Samoa, Solomon Islands, Tonga and Vanuatu. Remaining assessment missions planned for 2008 include Federated States of Micronesia, Marshall Islands, Palau and Papua New Guinea.

g. AusAID National Action Plan Facility

The Secretariat concluded discussions with AusAID on the establishment of a facility to support the development and implementation of NAPs for PICs. The AusAID NAP Facility has been established with the first tranche of funding of A\$765,000 for 2007/2008 allowing for implementation of this initiative. The approved A\$2.265 million would be for implementation over three years.

CRP is liaising with partners and country representatives to finalise DRR and DM priorities resulting from existing NAPs (for Vanuatu and Marshall Islands) and those near completion (Samoa and Cook Islands) for implementation. Elements of the Facility will also be used to assist in the development of NAPs for the Solomon Islands and Papua New Guinea, which are the remaining target countries identified for support in 2008. Should commencement of these actions not be possible in 2008 then commitments would be carried forward into 2009.

h. ACP/EU Natural Disaster Facility

The ACP/EU Natural Disaster Facility has been established to support the development and implementation of DRM National Action Plans for Pacific ACP states. The facility will run for 4 years from 2008 (once all the final documentation, currently under consideration by the ACP Secretariat in Brussels, has been accepted). The total amount to be disbursed to the Pacific ACP region is €1.868 million. In addition to NAP support the facility will also be mobilised to assist the on-going awareness and development work for the Pacific Disaster Net web portal.

i. World Bank – Global Facility for Disaster Reduction and Recovery (GFDRR): Pacific Initiative

The GFDRR which was established by the World Bank in 2006 to support, among other things, the implementation of the Hyogo Framework for Action at regional and national levels includes support for six selected Pacific Island Countries (Fiji, Kiribati, Marshall Islands, Papua New Guinea, Solomon Islands and Vanuatu). The broad intention of the Pacific Initiative is to develop a pipeline of projects and activities related to disaster risk reduction and climate change adaptation. The Pacific Initiative involved a stock take of current and planned disaster risk reduction and climate change adaptation projects and activities across the Pacific at regional and national level. The stock take commenced in February 2008 and was expected to culminate in the development of a Business Plan by September 2008.

The key actions under the World Bank initiative include:

- Regional Stock take and Gap Analysis – The initial component of the work was a regional stocktake, identifying country and regional needs; who is doing what; possible synergies; key gaps; and comparative advantages.
- Country Assessment – A set of country assessments within selected countries to deepen the understanding of DRR goals and activities, gaps, opportunities and needs at the national level.
- Business Plan – The initial regional and country assessments will be the basis for a detailed three-year business plan that would identify key areas of engagement, particularly aiming to identify opportunities for actual on-the-ground investments in climate and disaster risk reduction.

As at the end of July 2008 draft country assessment reports for the six target countries and a draft regional report was being considered by the World Bank. The final drafts once endorsed by countries and then by partner organisations (for the regional report) would then form the basis of the Business Plan.

j. World Bank – Catastrophe Risk Insurance Pool for the Pacific

During the SOPAC 36th Session, Council was informed of a proposed collaboration between SOPAC and the World Bank in relation to the conduct of a study to determine the feasibility of a Catastrophic Risk Insurance Pool for the Pacific.

The aim of the study is to investigate options for affordable and effective sovereign catastrophe risk financing solutions, including a Pacific Catastrophic Risk Insurance Pool as a financial vehicle to help Pacific islands states to cover their exposure to natural disasters such as windstorms, hurricanes/typhoons, earthquakes, tsunami and volcanic eruptions). This study was to be conducted in two phases. The first phase would involve the development of country-specific catastrophe risk models for a number of selected countries such as: Cook Islands, Fiji, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu. These models would be used to develop country-specific loss risk profiles and to assess the feasibility of catastrophe risk financing and insurance options. In the second phase models were to be developed for those countries not covered in the first phase.



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The first phase commenced in April and was expected to be completed by September 2008.

The study included the activities listed below:

- Development of a regional database of perils (e.g., windstorm/hurricanes/typhoons, earthquakes).
- Development of an exposure database (e.g., public assets and infrastructure, private assets, agricultural assets) for selected Pacific countries.
- Analysis of country catastrophic risk profiles involving the development of:
 - a regional catastrophic risk model for the Pacific region to allow for individual country catastrophic risk profiles; and
 - an indicative direct economic loss potential and government loss potential arising from natural disasters for selected Pacific countries.
- Analysis of the benefits of pooling catastrophic risks under different pooling scenarios (e.g., by peril, by sub-region).

k. 14th Regional Disaster Managers Meeting

The 14th Regional Disaster Managers' Meeting was held in Nadi, Fiji, from 21st to 22nd July 2008. This meeting signalled the move from a biennial to an annual format for the Regional Disaster Managers' Meeting, as recommended by the 13th Regional Disaster Managers' Meeting held in Majuro in 2007 and is in acknowledgement of the need for regular opportunities for exchange between member countries on matters pertaining to disaster risk management.

The theme of the meeting was Disaster Risk Reduction and Disaster Management in Pacific Island Countries – Addressing National Challenges to Enhance Mainstreaming. Specific goals were to: increase the understanding of mainstreaming initiatives and share experiences from across the Pacific and Asia regions; improve the understanding of mainstreaming strategies and tools; and improve the understanding of accountability and reporting requirements in relation to international and regional instruments for disaster risk management. The meeting was attended by representatives of the following countries: Australia, Cook Islands, Federated States of Micronesia, Fiji, Nauru, New Zealand, Niue, Palau, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu. The meeting was also attended by members of the Pacific Disaster Risk Management Partnership Network (Partnership Network) and other international, regional and national organisations. A representative of the Government of Indonesia was invited to attend and to present an account of the risk reduction mainstreaming experience of Indonesia. Other presentations/discussions included the items listed:

- An update of the progress of Pacific regional DRM initiatives undertaken since the 13th Regional Disaster Managers' Meeting.
- Future initiatives in relation to the on-going support for training and capacity building through the Pacific DRM (Training) Programme funded by the US Government through The Asia Foundation.
- Update of two World Bank initiatives for the Pacific: (a) Global Facility for DRR, which

projects assistance for risk reduction and climate change adaptation at national level for six PICs and at regional level; and (b) Feasibility Study for a Pacific Catastrophe Risk Insurance Pool.

- DRM Planning guide – discussions to finalise a draft DRM planning guide for use in mainstreaming activities in PICs.
- Discussions on the development of an on-line monitoring tool being developed by CRP for use by PICs and partner organisations to report progress against the implementation of the Regional Framework.

Some of the key outcomes of the meeting noteworthy of specific mention are listed below:

- SOPAC to continue to provide coordination of post-disaster technical assessment work, and to enhance this service by supporting implementation of an inter-NDMO support mechanism that would be mobilised following extreme events.
- SOPAC to continue supporting Pacific Island Countries with their efforts to mainstream disaster risk management considerations into national planning and budgetary processes. In this connection SOPAC is to continue to enlist the support of members of the Partnership Network.
- Countries, donors and partners to support the greater integration of climate change and disaster risk management initiatives at the national and regional level, in particular, SOPAC to continue to develop and support cooperative efforts with SPREP and to coordinate climate change adaptation assistance with disaster risk reduction work and that of the Pacific DRM Partnership Network.
- The proposal for the establishment of a Pacific Platform for Disaster Risk Management as a link from the Pacific to the Global Platform for Disaster Risk Reduction.

Follow up action with member countries on the outcomes of this meeting commenced in August and elements are reflected in the proposed CRP work plan for 2009.

I. Partnership Network Meeting 2007

The Partnership Network was established in 2006 to improve coordination of action by and seek cooperative and collaborative efforts between, regional and international organisations that support disaster risk management capacity building in the Pacific. The Partnership has formal reporting requirements to Pacific leaders on the progress of implementation of the relevant DRM strategies under the Pacific Plan. As the nominated facilitator of the Pacific Partnership Network, SOPAC organised the 2008 meeting in Nadi, Fiji, from 22nd to 23rd July 2008.

The theme of the meeting was A Call for Action: Strengthening the Partnership Network. A significant focus of the meeting was therefore to examine opportunities for improved strategic alliances and engagement at both the regional and national level within Pacific countries. In addition to members of the Pacific Partnership Network, the meeting was attended by representatives of other international, regional and national organisations and numerous SOPAC member countries (Australia, Cook Islands, Federated States of Micronesia, Fiji, Nauru, New Zealand, Niue, Palau, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu).

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Some of the key recommendations of the meeting are as follows:

- Partners to continue to improve communication on, and coordination in, their work with other partners as well as with national and community-based agencies to ensure efficient delivery of assistance.
- Partners to continue to develop local partnerships with government and non-government organisations, and particularly with local community and civil society groups, to enable Pacific Island communities at all levels to participate in, and implement, disaster risk management.
- Acknowledging the extra absorptive capacity demands imposed on countries when partners assist Pacific Island governments in implementing disaster risk management, Partners were urged to take account of in-country capacity and work as cohesively as possible with governments to minimise any burden.
- SOPAC and other members of the Partnership Network to encourage the broadening of the Network base to include all relevant donor, non-state and regional organisations and SOPAC to encourage their attendance at future meetings.
- In the interest of promoting South-South partnerships, Partners to continue to work with Asian neighbours and among Pacific NDMOs to share experiences and strengthen disaster risk management.
- Partners to support Pacific Island governments in conducting education, awareness raising, training and advocacy work in the Pacific, including the incorporation of disaster risk management to educational curricular.

m. Inaugural Pacific Regional DRM Meeting for Pacific CEOs of Finance/Planning and Disaster Management

Typically, the effort to address disaster risk management has been spearheaded at national level within Pacific countries by the National Disaster Management Offices. In light however of the need to ensure an improved effort to address disaster risk reduction, SOPAC working with other partner organisations has advocated quite extensively for the involvement of the upper echelon within the various Public Service jurisdictions in the Pacific in terms of ensuring that risk considerations are given a greater prominence in planning and budgeting systems within government and at each level within the national economy. In this regard this special meeting was organised to bring together, for the first time in the Pacific, the Chief Executives/Permanent Secretaries of those Ministries responsible for Disaster Management, with Chief Executives/Permanent Secretaries responsible for Finance and Planning.

The theme of the meeting was: Disaster Risk Management to Protect our Future: An Investment for Sustainable Development in Pacific Island Countries. The purpose of the meeting was to enhance the involvement and participation of key chief executives in Pacific governments in disaster risk management as a cornerstone requirement and imperative for supporting sustainable national development.

During the meeting the participants shared in panel discussions and presentations on certain key issues that included the following:

- The Impact of Disasters on Small Island Economies and the Role of Economic Tools to Support Disaster Risk Management.
- Disaster Risk Management Mainstreaming – experiences of Pacific countries and guidelines for future mainstreaming activity.
- Hazard Risk Assessments and the role of technical solutions in informing policy development.
- Disaster response mechanisms in the Pacific.
- Disaster Risk Management – an imperative for strengthening national sustainable development planning and decision-making.

The meeting was perceived as a significant event, more so because it bodes well for future mainstreaming efforts within PICs as the upper echelon of Government bureaucracies become more involved in operational processes through providing the necessary leadership and guidance. The challenge facing SOPAC and its partners is to work actively with national counterparts and participants from this meeting to build the momentum for further national investments in disaster risk management.

n. Pacific Disaster Net (PDN)

The Pacific Disaster Net (PDN) has now been launched and can be accessed at www.pacificdisaster.net. The PDN is a web portal and database system and is designed to become the largest and most comprehensive information resource in relation to Disaster Risk Management for the Pacific. Over the course of 2006 and 2007 the PDN had been undergoing various structural design and development stages and in early 2008 this was capped off with graphic design which essentially addressed the “look and feel” aspects.

A complementary mechanism in support of the Pacific Disaster Net is a Web Search Tool which continues to undergo development. This tool will allow for regular, automatically generated searches of various websites to allow users to be directly informed of any emerging initiatives such as new publications, offer of training courses and, meetings and conferences/workshops. Information gathered through the search engine would be channelled to NDMOs and other partners to enhance knowledge and decision-making capacity in relation to disaster risk management.

o. Pacific Disaster Risk Management (Training) Programme

SOPAC continued with its commitment to improve disaster risk management skills levels and expertise among Pacific islanders by maintaining its long standing relationship with The Asia Foundation/Office of US Foreign Disaster Assistance (TAF/OFDA), under the Training Programme. With the support of TAF/OFDA a number of courses were organised throughout the Pacific for a broad range of participants. The following courses were conducted in 2007/2008.

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Course	Number	Country
1. Introduction to Disaster Management	5	Cook Islands; Federated States of Micronesia (2); Fiji; Vanuatu
2. Initial Damage Assessment	7	Cook Islands; Federated States of Micronesia (2); Fiji (2); Samoa; Vanuatu
3. Exercise Management	2	Cook Islands; Solomon Islands
4. Risk Programme Management	–	
5. Emergency Operation Centres	–	
6. Training for Instructors	2	Fiji; Tonga
Total	16	

In addition to the training, TAF/OFDA and SOPAC collaborated with the United Nations Office for the Coordination of Humanitarian Affairs (UN-OCHA) and the International Federation of Red Cross and Red Crescent Societies (IFRC) to provide scholarship support to Pacific islanders to obtain a Post-Graduate Certificate in Disaster Management from the Swinburne University in Melbourne Australia. In 2008 four Pacific participants from the Solomon Islands, Papua New Guinea and Fiji were sponsored.

The TAF/OFDA programme would reach the end of its current funding cycle in December 2008. The US Government, through USAID/OFDA, has indicated the intention to continue engagement with the Pacific for disaster management and disaster risk reduction training and capacity development from 2009; however, at this time no specific details are available on the level of support.

p. Inter-NDMO Post-Disaster Support Facility

The proposal to establish an Inter-NDMO Support Facility to facilitate the sharing of capacity support between NDMOs immediately following major disasters, was first raised at the 13th Regional Disaster Managers' Meeting; and then discussed at the SOPAC 36th Session. Further consultation has been undertaken with NDMOs and partners and the Secretariat would soon finalise a policy circular on the subject.

q. Study on the links between Poverty and Disasters

A project to analyse the relationship between natural disasters and poverty in the Pacific with funding support from the United Nations International Strategy for Disaster Risk Reduction (UN/ISDR) was commenced. The project is designed to provide critical information to improve the mainstreaming of disaster risk management in the Pacific. It has also been designed to be consistent with, and to inform, the Global Assessment Report on Disaster Risk Reduction (GAR), which is to be produced by the Secretariat of the UN/ISDR in 2009 for the second meeting of the Global Platform for Disaster Risk Reduction, scheduled for June 2009 in Geneva.

Project analysis would be based on a recently developed methodology which has been spearheaded by UN/ISDR in collaboration with UNDP and other ISDR System partners. The methodology would be adapted to be relevant to Pacific Island Countries, generally, and would be tested on Fiji as a case study. Future applications of the methodology in the Pacific would then enable comparison and regional analysis. The results of this project would be used to support the mainstreaming of DRM in Fiji specifically, and raise the profile of DRM and poverty regionally; and ensure the development of Pacific-sensitive policies affecting disaster and poverty internationally.

NEW AND EMERGING ISSUES

This section highlighted the new initiatives and emerging opportunities that are strategic to the Community Risk Programme in 2009 and beyond.

1. NEW INITIATIVES

a. Pacific Platform for Disaster Risk Management

A Pacific Platform for Disaster Risk Management (PPDRM) will allow for a single forum for exchange and sharing of experiences within the Pacific Islands Region in relation to policy and operational aspects of disaster risk reduction and disaster management. The Pacific Platform would additionally serve as the link between Pacific Island Countries and the Global Platform for Disaster Risk Reduction (GP/DRR).

The concept of regional platforms draws from the strengthened global system for disaster risk reduction led by the UN/ISDR. This system supports advocacy for disaster risk reduction and cooperation at regional and sub-regional levels in support of national initiatives and national platforms. The Secretariat for the UN/ISDR in 2006/2007 organised a number of consultations with international and regional organisations to examine the proposal for strengthening the ISDR system in the light of the realities, current institutional mechanisms and challenges for implementing the Hyogo Framework for Action (HfA) in each region. The intent of the HfA has been adapted to the Pacific context and is known as the Pacific Disaster Risk Reduction and Disaster Management Framework for Action 2005 - 2015, endorsed by Forum Leaders and included under their Kalibobo Roadmap of the Pacific Plan.

The Pacific Platform for DRM would build on the current level of exchange and dialogue and bring together on a biennial basis the CEOs responsible for Disaster Management and those CEOs responsible for leading and having primary oversight for the mainstreaming effort for Disaster Risk Reduction (Finance/Planning) in the Pacific countries, with the members of the Partnership Network and the Directors of National Disaster Management Offices.

Beyond the target CEO group there is a further opportunity to, on occasion, extend participation to CEO's or Permanent Secretaries for other sectors such as agriculture, health, education, tourism, infrastructure/works and rural or outer islands administration/development.



community risk programme

The objectives of the PPDRM are as follows:

1. Support the implementation of the Hyogo Framework for Action and the Pacific Disaster Risk Reduction and Disaster Management Framework for Action 2005-2015.
2. Promote regional cooperation; and strengthen further coordination mechanisms, understanding, commitment and approaches for disaster risk reduction and disaster management in the Pacific.
3. Review progress on the implementation of disaster risk reduction and disaster management in the Pacific and report to the Global Platform for Disaster Risk Reduction.
4. Determine and prepare for participation of Pacific states and other key stakeholders at the meetings of the Global Platform for Disaster Risk Reduction.

b. ADB Project – Regional Stocktake and Mapping of DRR for the Asia-Pacific Region

Following the 2007 Delhi Ministerial Declaration, the members of the ISDR Asia Partnership (IAP) established a working group to carry out a regional stocktake and mapping of DRR interventions. The following organizations have agreed to participate in this working group: ADB, Asian Disaster Preparedness Center, Asian Disaster Reduction Center, Asian Disaster Reduction and Response Network, IFRC, UN/OCHA, SOPAC, UNDP and the World Bank. At the last meeting of the IAP in February 2008, the members agreed to transform this working group into a project steering committee.

UN/ISDR prepared the initial concept note outlining the key features of the regional stocktaking and mapping initiative which has been refined through consultation with the members of the mentioned working group, as well as the wider IAP at its Third Meeting of the Expanded IAP, held from 13 to 15 February 2008 in Bangkok.

The purpose of the regional stock taking and mapping of disaster risk reduction interventions is to present an overview of ongoing and planned regional DRR interventions within the broader context of the regional disaster risk profile. The collated information would not only contribute to improved regional planning and programming and highlight the areas for cooperation among regional/sub-regional organisations, it would also add to periodic progress reviews and reporting processes at the regional/sub-regional levels such as biennial HfA Progress Reviews and the preparation of the 2009 UN Global Assessment Report. In addition, it would assist donor agencies and decision-makers to channel resources and efforts that can meet their own policy and programmatic imperatives while implementing DRR.

The stocktaking and mapping exercise will build on the progress made by other initiatives and learn from the strengths and shortcomings. Some of the previous efforts to be referenced are: Asia Pacific Economic Cooperation Task force on Emergency Preparedness Stocktaking of Activities (2005), SOPAC (The Pacific Disaster Net), SOPAC/World Bank (World Bank Initiative – Sustainable Management through Reduced Risk from Disasters and Climate Variability in the Pacific (2008), the ISDR System (the Prevention Web), the IRP (Database on Good Practices in Recovery), and ADPC (Community Based Disaster Risk Management Project Database, good practice website, and list of regional mechanisms and institutions working in disaster risk

reduction). There are also a number of existing global/regional initiatives focusing on hazard and vulnerability information undertaken by the Global Risk Identification Platform-GRIP (risk assessments), UN/OCHA (Risk Assessment Analysis for Asia Pacific, the Relief Web), the ASEAN (disaster events database and website), and the PDC (hazard and vulnerability atlas), and others.

The primary beneficiaries of this project would be regional stakeholders in DRR which include amongst others UN agencies, inter-governmental organisations, research and technical organisations, NGOs, and in particular the members of the IAP, who will use the results for enhanced regional planning, programming and cooperation. In addition, national DRR stakeholders such as national governments, UN agencies, research institutions and universities, the private sector, and donor agencies will be able to benefit by receiving more coherent regional assistance and greater clarity on the type of support they may be able to access from the regional level which should clarify their own DRR goals and implementation of the HfA and the Pacific DRR and DM Framework for Action at the national level.

c. National DRM Reports and Regional Synthesis Report for the Global Platform for Disaster Risk Reduction, June 2009

SOPAC, in liaison with the UN/ISDR, would consult with countries and other partners to support the development of a series of national reports and a regional synthesis report on the progress of implementation of the Hyogo Framework for Action and the Pacific DRR and DM Framework for Action 2005-2015. These reports would be presented to the Second Global Platform for Disaster Risk Reduction meeting to be held in Geneva in June 2009. The submission of these reports are in line with the reporting requirements against the implementation of the Hyogo Framework for Action. The reports would also be used to support progress reporting to Pacific Leaders relating to the implementation of the Pacific Framework for Action and the Pacific Plan.

2. EMERGING OPPORTUNITIES

a. An Integrated Approach to the implementation of the Pacific DRR and DM Framework for Action and the Pacific Islands Framework for Action on Climate Change

An opportunity exists to strengthen the collaboration between SPREP and SOPAC in relation to the development of an integrated approach to the implementation of the Pacific DRR and DM Framework for Action and the Pacific Islands Framework for Action for Climate Change (PIFACC). The increase in frequency and intensity of extreme weather and climate events such as storms, storm surges, droughts and floods are major contributors to hazard risks in the region. Consequently it is suggested that a whole-of-government or more preferably a whole-of-country, holistic process toward identifying risk reduction priorities, including climate change risks be embraced to realise effective implementation of two priority, strategic regional policy instruments.

community risk programme

The Regional Framework has six thematic areas:

Theme 1: Governance – organisational, institutional, policy and decision-making frameworks

Theme 2: Knowledge, information, public awareness and education

Theme 3: Analysis and evaluation of hazards, vulnerabilities and elements at risk

Theme 4: Planning for effective preparedness, response and recovery

Theme 5: Effective, integrated and people-focused early warning systems

Theme 6: Reduction of underlying risk factors

The PIFACC is structured around six principles:

Principle 1: Implementing adaptation measures

Principle 2: Governance and decision-making

Principle 3: Improving our understanding of climate change

Principle 4: Education, training and awareness

Principle 5: Contributing to global greenhouse gas reduction

Principle 6: Partnerships and cooperation

Given that there are strong similarities in the focus, intent and content of both frameworks it is incumbent on the agencies with lead regional coordination responsibilities to seek ways to collaborate to ensure effective implementation of identified priorities that need to be addressed under these. Currently SOPAC addresses the implementation of the Pacific DRR and DM Framework for Action through a process of national action planning which brings together a range of national and regional stakeholders. This process results in the identification of both DRR and DM measures that would need to be implemented by a country to help enhance its resilience and safety in the face of hazards. SPREP is shortly to finalise an approach to the implementation of PIFACC in which Pacific countries would most likely be engaged in a process similar to that currently being used for the Pacific DRR and DM Framework for Action. It is because of the similarities in the focus of the two frameworks and potentially in the approaches each would use for regional and national implementation that the two agencies should collaborate more effectively. A joint approach would reduce the burden of implementation for each country due to a streamlined and consistent mode of support and assistance.

b. Pacific Ministerial Meeting on Disaster Risk Management and Development

The Pacific Regional Framework was approved by Pacific Forum Leaders at their meeting in Madang, Papua New Guinea, in 2005. Since then the discussions on the implementation of the Regional Framework have been at the Regional Disaster Managers' meetings; Partnership Network meetings; and now at CEO level within Pacific countries.

Whilst this is significant progress, there is the further need to generate additional momentum and ultimately greater support for the approval of national and sector plans and budgets containing initiatives for disaster risk reduction (and climate change adaptation) and disaster management. This requires support at the Ministerial level within each country. There is thus the need to consider such a Ministerial meeting – one that could bring together those responsible for key portfolios to discuss issues in relation to disasters and development and more importantly to illicit their guidance and commitment toward progressing implementation of the Regional Framework.

c. Advocacy for SOPAC DRR Programmes at Cabinet level within PICs

There is a need to consider expanding the composition of the high-level advocacy missions on DRM within member countries, to include SOPAC's entire work programme. The initiative would demonstrate disaster risk management as a development issue and not as a purely 'disaster management' or an 'emergency response' concern as has been the case for some time. The various services, products and tools available through the Ocean and Islands Programme and the Community Lifelines Programme (together with the DRM mainstreaming efforts of the CRP) need to be brought to the attention of the highest level decision-makers to increase the understanding of and in turn support for their sustainable development initiatives.

d. Examining the interface between disasters, climate change and conflict in the Pacific - EU Instrument for Stability

Consultations have commenced with the UNDP Pacific Centre to develop a concept note for a project on the interface between disasters, climate change and conflict in the Pacific region. The concept/project if endorsed by the EU would be funded by the Instrument for Stability (IFS). The IFS is intended to support conflict prevention initiatives. It currently funds two initiatives in the Pacific, which are Fiji: support for the Electoral process; and Solomon Islands: support for the Truth and Reconciliation Commission).

e. Strengthening of the Pacific Disaster Risk Management Partnership Network (PDRMPN)

The need to strengthen the Partnership Network remained an issue in 2007/2008. Whilst some progress has been made since the matter was discussed at the SOPAC 36th Session, there remains a need to ensure improved cooperation and collaboration among members in terms of assistance to Pacific countries for the development and implementation of the Regional Framework, whilst remaining cognisant of the opportunities for integrated approaches to cooperation and implementation of related regional policy instruments such as the PIFACC.

In this connection dialogue has commenced to consider the establishment of "clusters" or sub-groups of Partnership members, under the PDRMPN in an effort to strengthen cooperation and collaboration to expedite implementation of the Regional Framework. SOPAC as facilitator of the PDRMPN would need to progress this initiative with members in 2009.



Appendix 1: SUMMARY OF 2008 DONOR FUNDING BY PROGRAMME

ANTICIPATED SOURCE OF FUNDS	GRAND TOTAL	TOTAL OCEAN & ISLANDS	TOTAL COMMUNITY LIFELINES	TOTAL COMMUNITY RISK	TOTAL CORPORATE SERVICES	TOTAL DIRECTORATE
A: DONOR FUNDING						
EU – Water Facility HYCOS	3,342,265	0	3,342,265	0	0	0
Australia – Annual Grant	3,214,245	1,450,975	1,060,666	702,604	0	0
European Union EDF 9	2,883,092	994,362	1,006,405	710,825	171,501	0
New Zealand – Annual Grant	2,315,953	609,437	1,369,268	337,248	0	0
European Union EDF 9 B Envelope	1,753,700	0	0	1,753,700	0	0
EU – Water Facility IWRM	1,631,337	0	1,631,337	0	0	0
Kiribati EU/NIP B Envelope EDF9 Trust Funds	1,521,739	1,521,739	0	0	0	0
ACP/EU National Disaster Funds	1,020,039	0	0	1,020,039	0	0
Australia – Special Grant	993,506	0	0	993,506	0	0
GEF – UNDP	710,303	0	710,303	0	0	0
Geoscience Australia (PGSP)	585,195	585,195	0	0		0
BOM Australia	336,572	336,572	0	0	0	0
Republic of Korea (IK)	300,000	300,000	0	0	0	0
Danish/EU	274,603	0	274,603	0	0	0
Technical Centre for Agricultural & Rural Co-operation (CTA)	246,652	0	246,652	0	0	0
Japan	238,095	0	238,095	0	0	0
EU – REP 5	181,010	0	181,010	0	0	0
Fiji	134,365	134,365	0	0	0	0
United Kingdom (ODI)	117,700	117,700	0	0	0	0
Australia Volunteer International (AVI)	117,700	117,700	0	0	0	0
New Zealand – Special Grant	89,888	0	89,888	0	0	0
NOAA	88,710	88,710	0	0	0	0
TAF/OFDA	76,485	0	0	76,485	0	0
Kiribati (Bilateral)	55,000	55,000	0	0	0	0
Water Supply, Sanitation Coordinating Committee (WSSCC)	47,619	0	47,619	0	0	0
ISIF	47,619	0	47,619	0	0	0
GPA-UNEP	47,619	0	47,619	0	0	0
E-Parliament Secretariat	34,783	0	34,783	0	0	0
EC Regional Technical Facility	33,211	0	33,211	0	0	0
APCICT	25,825	0	25,825	0	0	0
PNG (IK)	25,000	25,000	0	0	0	0
Taiwan (ROC)	23,810	0	23,810	0	0	0
UNESCO IOC	19,481	19,481	0	0	0	0
Internet Open Source Network – PIC	17,698	0	17,698	0	0	0
Pacific Chapter of Internet Society (PICISOC)	15,873	0	15,873	0	0	0
Foundation for Development Cooperation (FDC)	5,952	0	5,952	0	0	0
TOTAL DONOR FUNDING	22,572,645	6,356,234	10,450,502	5,594,408	171,501	0
B: TOTAL REGULAR BUDGET (principally membership contribution)	3,179,975	64,600	76,654	0	2,355,481	683,240
TOTAL 2008 APPROVED REVISED BUDGET	25,752,620	6,420,834	10,527,156	5,594,408	2,526,982	683,240
TOTAL 2009 APPROVED BUDGET	31,841,577	6,970,374	10,605,465	11,006,812	2,368,698	890,228

Appendix 2: REPORTS & PUBLICATIONS UPDATE (as at 30 October 2008)

CORPORATE PUBLICATIONS

Proceedings of the Thirty-sixth Session hosted by the Government of the Kingdom of Tonga in Nuku'alofa, Tonga, 22-28 November 2007.

Annual Report Summary 2007.

TECHNICAL REPORTS

- 407 Designing a drinking water quality monitoring programme – a practical guide for Pacific Islands Countries/Tasleem Hasan & William Aalbersberg
- 408 Sedimentation survey of Yonki Reservoir, Eastern Highlands, Papua New Guinea, September - October 2007/Robert Smith
- 409 Rapid biological marine assessment of the proposed RMI-EPA sand and aggregate dredging site locations within Majuro Lagoon, Republic of the Marshall Islands/Stephen Lindsay (consultant)
- 410 Process used for the Development of the National Energy Policies in Pacific Islands Countries/Anare Matakiviti
- 411 Sedimentation survey of Sirinumu Dam, Eastern Highlands, Papua New Guinea, September-October 2007/Robert Smith
- 412 Buka Island Passage Cross-Section Profiles, the Autonomous Region of Bougainville, Papua New Guinea, October 2007/Robert Smith

MISCELLANEOUS REPORTS

- 635 National Integrated Water Resource Management (IWRM) diagnostic report – Cook Islands/IWRM team
- 636 National Integrated Water Resource Management (IWRM) diagnostic report – Federated States of Micronesia/IWRM team
- 637 National Integrated Water Resource Management (IWRM) diagnostic report – Fiji Islands/IWRM team
- 638 Using economic information to achieve integrated planning and management/Paula Holland & Allison Woodruff [presented at SOPAC 36th Session, Tonga, 21 November 2007]
- 639 National Integrated Water Resource Management (IWRM) diagnostic report – Marshall Islands/IWRM team
- 640 National Integrated Water Resource Management (IWRM) diagnostic report – Nauru/IWRM team
- 641 National Integrated Water Resource Management (IWRM) diagnostic report – Niue/IWRM team
- 642 National Integrated Water Resource Management (IWRM) diagnostic report – Palau/IWRM team
- 643 National Integrated Water Resource Management (IWRM) diagnostic report – Papua New Guinea/IWRM team
- 644 National Integrated Water Resource Management (IWRM) diagnostic report – Samoa/IWRM team
- 645 National Integrated Water Resource Management (IWRM) diagnostic report – Solomon Islands/IWRM team
- 646 National Integrated Water Resource Management (IWRM) diagnostic report – Tonga/IWRM team
- 647 National Integrated Water Resource Management (IWRM) diagnostic report – Tuvalu/IWRM team
- 648 National Integrated Water Resource Management (IWRM) diagnostic report – Vanuatu/IWRM team
- 653 KIRIBATI – Inventory of geospatial data available and options for tsunami inundation and risk modelling (SOPAC/GA Tsunami Hazard & Risk Assessment Project - Report 3)/Helen Pearce
- 654 SOLOMON ISLANDS – Inventory of geospatial data available and options for tsunami inundation and risk modelling (SOPAC/GA Tsunami Hazard & Risk Assessment Project - Report 4)/Helen Pearce
- 655 FIJI ISLANDS – Inventory of geospatial data available and options for tsunami inundation and risk modelling (SOPAC/GA Tsunami Hazard & Risk Assessment Project - Report 5)/Helen Pearce
- 656 TUVALU – Inventory of geospatial data available and options for tsunami inundation and risk modelling (SOPAC/GA Tsunami Hazard & Risk Assessment Project - Report 6)/Helen Pearce
- 657 SOPAC/GA Tsunami Hazard & Risk Assessment Project Inventory of Geospatial Data and Options for Tsunami Inundation & Risk Modelling – Phase 1: PIC Summary/Helen Pearce
- 658 Niue Sustainable Coastal Development Policy/Netatua Pelesikoti & Litea Biukoto
- 659 Government of Niue Sustainable Coastal Development Policy 2008 (Policy Development Workshop(s) Report)/Netatua Pelesikoti & Litea Biukoto
- 660 Pacific Island Countries GIS/RS User Conference 2007, 4-7 December at the University of the South Pacific, Suva, Fiji/Wolf Forstreuter
- 661 Report on solar cooking demonstration workshop in Kiribati, 14-21 February 2008/Koin Etuati
- 665 Water Demand Management Programme for Pacific Island Countries – information brochure/Mathias Kleppen
- 666 Demand Side Management best practices guidebook for Pacific Island power utilities/CROP Energy Group [CD Rom only]

- 667 SOPAC Director's Report against Business Plan 2007; Proposed 2008 SOPAC Integrated Corporate Risk Management Plan; Proposed Annual Business Plan 2008/Mohinish Kumar & Cristelle Pratt
- 668 Energy survey on the islands of Maiana and North Tarawa in Kiribati/Rupeni Mario.
- 669 A gender tale of water and energy (Comic Book)/Kamal Khatri
- 670 Gender awareness and analysis workshop report, Suva, 13 September 2007/SOPAC Water and Sanitation Programme [in collaboration with PIFS and FSPI]
- 671 Sanitation and wastewater management in Tonga/Azania Fusimalohi Newton [consultant]
- 672 Abstracts of Papers Presented at the STAR Session 2008, hosted by the Government of Tuvalu at the Government Buildings, Funafuti/John Collen & Lala Bukarau [compilers]
- 673 SOPAC Director's Report against Business Plan 2008; Proposed 2009 SOPAC Integrated Corporated Risk Management Plan; Proposed Annual Business Plan 2009/Mohinish Kumar & Cristelle Pratt
- 675 Benefit-cost analysis for improved natural resource decision-making in Pacific Islands Countries/Allison Woodruff & Paula Holland [presented at CRISP Economic Workshop, 26-30 May 2008]
- 679 Disaster risk management in the Pacific: economic analysis and advocacy. (Paper presented at the Inaugural Pacific Regional Disaster Risk Management Meeting for Pacific CEOs of Finance/Planning and Disaster Management, 24-25 July 2008, Nadi.)/Paula Holland

EU-SOPAC PROJECT REPORT

- 95 Training in GIS for disaster risk reduction and disaster management in Fiji/Litea Biukoto
- 96 Training in GIS for disaster risk reduction and disaster management Solomon Islands and Vanuatu/Litea Biukoto
- 103 2008 EDF9 Work Plan and Budget/Bhaskar Rao & Mohinish Kumar
- 104 Vanuatu – Proceedings of the Vanuatu National Coastal Resources Management Workshop: Planning and Policy Frameworks for Coastal Resources Management with an emphasis on Sustainable Development and Management of Aggregates, Chantilly Hotel, Port Vila, Vanuatu, 20 - 21 August 2007/Akuila Tawake
- 105 Republic of Marshall Islands Technical Report: Rapid Biological Marine Assessment of the Proposed RMI-EPA Sand and Aggregate Dredging Site Locations within Majuro Lagoon/ Stephen Linday (consultant)
- 106 Proposed Framework and Guidelines for Sustainable Aggregates Development and Management in the Solomon Islands/Akuila Tawake
- 107 Solomon Islands Technical Report: Assessment of potential terrestrial aggregate sources on Ghizo Island, Solomon Islands/Akuila Tawake
- 108 Marshall Islands Technical Report: Assessment of marine aggregates in selected sites of the Majuro Lagoon Rim, Republic of the Marshall Islands/Akuila Tawake
- 109 Fiji Technical Report: High-resolution bathymetric survey/Jens Kruger
- 110 Vanuatu Technical Report: High-resolution bathymetry survey of Vanuatu/ Jens Kruger
- 111 Tonga Technical Report: High-resolution bathymetric survey/ Jens Kruger
- 112 Samoa Technical Report: High-resolution bathymetric survey/ Jens Kruger
- 113 Solomon Islands Technical Report: High-resolution bathymetry of Solomon Islands/Jens Kruger
- 114 Kiribati Technical Report: High-resolution bathymetry of Kiribati/Jens Kruger
- 115 Papua New Guinea Technical Report: High-resolution bathymetry survey/Jens Kruger
- 116 Nauru Technical Report: High-resolution bathymetry of Nauru/Jens Kruger
- 117 Marshall Islands Technical Report: High-resolution bathymetric survey/Jens Kruger
- 118 Niue – Training Report on Basic GIS and GPS Training held during 5-15 May 2008/Elizabeth Lomani-Whippy & Vilisi Tokalauvere
- 119 Republic of the Marshall Islands National Action Plan for Disaster Risk Management/Netatua Pelesikoti
- 120 Federated States of Micronesia Report on Image Backdrop Production Training, Pohnpei, 26 May to 6 June 2008/ Elizabeth Lomani-Whippy & Vilisi Tokalauvere
- 121 Cook Islands Technical Report: High-resolution bathymetry survey/ Jens Kruger, Ashishika Sharma & Satesh Kumar
- 122 Fiji Technical Report – An economic analysis of flood warning in Navua, Fiji Islands/Paula Holland
- 123 Project Progress – Report for the period January to December 2007/Bhaskar Rao
- 124 Project Progress – Intermediate Report for the period January to June 2008/Bhaskar Rao
- 125 2008 Revised Work Plan and Budget/Mohinish Kumar
- 126 Nauru – Economic analysis of Establishing a Sub-regional Aggregate Supply in Nauru/Allison Woodruff

- 127 Federated States of Micronesia – marine bathymetry survey/Jens Kruger, Satesh Kumar & Ashishika Sharma
- 128 Pacific Islands Technical Report – Planning Guidelines for Offshore Aggregates Dredging: Sustainable Development and Management of Marine-Sources Aggregates/Netatua Pelesikoti
- 129 EDF8 Project Closure Report – Outlining Project Implementation and Results for the Period March 2002 till 31 December 2007/Bhaskar Rao
- 130 Training in GIS for DRR and DM in the Cook Islands/Litea Biukoto
- 131 Sustainable development and phosphate mining – Nauru/George Niumataiwalu
- 132 Household aggregate mining on Funafuti, Tuvalu/Angela Ambroz
- 133 Tuvalu Technical Report – Hydrodynamic model of Funafuti/Herve Damlamian
- 134 Kiribati Technical Report – Hydrodynamic model of Tarawa/Herve Damlamian
- 135 Tonga Technical Report – Hydrodynamic model of Fanga’uta/Herve Damlamian
- 136 Kiribati Technical Report – Intertidal Channel Flow, North Tarawa/Herve Damlamian
- 137 Tuvalu Technical Report – An economic feasibility assessment of lagoon dredging in Funafuti, Tuvalu, August 2008/Angela Ambroz

TRAINING REPORTS

- 132 Improving sanitation and wastewater management for Pacific Island Countries – Training Assessment Report, Nuku’alofa, Tonga, 25-29 August 2008/Sione Faka’osi & Kamal Khatri

JOINT CONTRIBUTION REPORTS

- 192 Integrated Water Resources Management in Pacific Islands Countries – A Synopsis (UNDP/UNEP/GEF/SOPAC/Pacific Water Partnership)/SOPAC & WHO
- 193 Drinking Water Safety Planning – A Practical Guide for Pacific Island Countries/WHO & SOPAC
- 194 Sanitation, hygiene and drinking-water in the Pacific Islands countries – converting commitment into action/WHO & SOPAC
- 195 Perspectives on water and climate change adaptation – Adapting to climate change in water resources and water services in Caribbean and Pacific small island countries/SOPAC & CEHI

RESTRICTED CIRCULATION (UNPUBLISHED) REPORTS

Pacific Islands Energy Policy and Strategic Action Plan (PIEPSAP) Project Reports

- 53 Review of Tuvalu Electricity Corporation Base Tariff – Final Report. RESTRICTED/Ridgway Capital Projects Limited
- 71 Process Used for the Development of the National Energy Policies in Pacific Island Countries/Anare Matakiviti (published as SOPAC Technical Report 410)
- 72 Palau Inception Report – Assistance to the Palau Government in the Development of a Palau Energy Conservation Strategy to Reduce Government Energy Use/Philippe McCracken, Peter Johnston & Herbert Wade
- 73 Palau National Consultations PIEPSAP and REP5 Steering Committee – Back to Office Report/Gerhard Zieroth
- 74 Interim Report Palau Energy Conservation Strategy – Assistance to the Palau Government Toward the Development of a Palau Energy Conservation Strategy to Reduce Government Energy Use/Philippe McCracken, Peter Johnston & Herbert Wade
- 75 Fiji Electricity Authority (FEA) Regulatory Review (5 parts)/Maunsell Limited & World Dialogue on Regulation for Network Economies (WDR) [consultants]
- 76 Kiribati National Energy Policy initial consultation, 3-10 April 2008 – Back to Office Report/Gerhard Zieroth
- 77 Nauru PIEPSAP wrap-up Mission, 11-17 April 2008 – Back to Office Report/Gerhard Zieroth
- 78 Solomon Islands PIEPSAP wrap-up Mission, 18-22 April 2008 – Back to Office Report/Gerhard Zieroth
- 79 Quarterly Progress Report, First Quarter 2008, March 2008/Gerhard Zieroth
- 80 Samoa National Energy Plan – Strategic Action Plan
- 81 PIEPSAP End of Project Report: Concept, Results, Lessons Learnt and Outlook. October 2008/Gerhard Zieroth

OTHER NEWSLETTERS

Mission reports – 32 (PR432 to PR462)
GIS & Remote Sensing Newsletter – 2 issues
Pacific Energy News (PEN) – 3 issues
Snapshots (CRP news bulletin) – 6 issues
Pacific Partnership Initiative on Sustainable Water Management – 3 issues

Appendix 3: Annual Session Staff List (December 07 – October 08)

POSITION	NAME	COUNTRY OF ORIGIN	DATE JOINED SOPAC	CONTRACT START	CONTRACT END
DIRECTORATE					
Director	Cristelle Pratt	New Zealand	May-00	Feb-07	Feb-10
Deputy Director	Bhaskar Rao	Fiji	May-04	Sep-08	Mar-10
Executive Assistant	Litia Waradi	Fiji	Apr-89	Jan-07	Dec-09
Communications & Media Officer	Naziah Ali	Fiji	May-07	May-07	Nov-08
Programme Assistant – SOPAC EU/EDF Project	Elina Moceitai	Fiji	Sep-07	Sep-07	Jul-08
OCEAN & ISLANDS PROGRAMME					
Manager Ocean & Islands	Arthur Webb	United Kingdom	Jul-04	Mar-08	Mar-11
Senior Adviser – Physical Oceanography	Jens Kruger	United Kingdom	Sep-04	Sep-07	Dec-08
Senior Adviser – Resource Economist	Paula Holland	Australia	Mar-06	Mar-06	Mar-09
Senior Adviser – Marine Geophysics	Robert Smith	Australia	May-88	Jul-07	Jun-10
Senior Adviser – Aggregates	Akuila Tawake	Fiji	Oct-03	Jan-08	Dec-08
Senior Adviser – Geoscience Training	Vacant				
Senior Adviser – Marine Geoscience	Vacant				
Adviser – Technical (Electronics)	Vacant				
PI-GOOS Coordinator	Paul Eastwood	United Kingdom	Apr-07	Apr-07	Feb-09
Adviser - Communications & Coordination	Tagaloa Cooper	Niue	Oct-06	Oct-06	Oct-09
Project Officer 1 – Technical (Marine)	Vacant				
Project Officer 2 – Technical (Surveying)	Andrick Lal	Fiji	Aug-01	Aug-07	Aug-10
Project Officer 3 – Technical (Geoscience)	Sekove Motuiwaca	Fiji	Apr-80	Jan-07	Dec-09
Project Officer 4 – Technical (Electronics)	Peni Musunamasi	Fiji	Jun-89	Jan-07	Dec-09
Project Officer 5 – Maritime Boundaries	Emily Artack	Fiji	May-04	Jan-05	Dec-07
Project Officer 6 – Geoscience Training	Vacant				
Resource Economist	Allison Woodruff	Canada	Oct-05	Oct-07	Oct-08
Programme Assistant – Ocean & Islands	Virginia Rokoua	Fiji	Jan-07	Mar-08	Mar-11
EU/EDF Technical Officer	Salesh Kumar	Fiji	Apr-06	Apr-06	Dec-08
SOPAC EU/EDF Technical Officer	Ashishika Sharma	Fiji	Mar-06	Mar-06	Dec-08
Coastal Numerical Modeller	Herve Damlamian	France	Oct-05	Jan-08	Dec-08
Assistant Geology Technician	Donato Rogica	Fiji	Jun-07	Jun-07	Jun-10
Assistant Electronics Technician	Maleli Turagabeci	Fiji	Apr-07	Apr-07	Apr-10
AVI Database Development Officer	Brian Bishop	Australia	Mar-07	Mar-07	Dec-08
AVI Tsunami Risk Geospatial Data Officer	Helen Pearce	Australia	Mar-07	Mar-07	Mar-08
ODI Resource Economist	Angela Ambroz	USA	Oct-07	Oct-07	Jun-09
Technical Adviser Seismic Stratigraphy	Ju-hwan Woo	Korea	Oct-07	Oct-07	Oct-08
Technical Adviser Oceanographer	Yosup Park	Korea	Oct-07	Oct-07	Oct-08
Fellowship Attachment	Amrit Raj	Fiji	Apr-07	Jan-08	Dec-08
Trainee Attachment	Avitesh Ram	Fiji	Jan-08	Jan-08	Dec-08
Trainee Attachment	Kain Teaotai	Kiribati	Jul-08	Jul-08	Jul-08
COMMUNITY LIFELINES PROGRAMME					
Manager Community Lifelines	Paul Fairbairn	New Zealand	Jan-98	Sep-06	Feb-10
Adviser – ICT/CLP	Siaosi Sovaleni	Tonga	Oct-05	Oct-08	Oct-11
Senior Adviser EU – GIS and Remote Sensing	Wolf Forstreuter	Germany	Jan-99	Jan-08	Dec-08

Senior Adviser EU – ICT Specialist	Franck Martin	France	Sep-93	Jan-08	Sep-08
Manager-Water, CLP	Marc Overmars	Netherlands	Apr-00	Jan-06	Dec-09
Adviser – Energy(PIEPSAP Project)	Anare Matakiviti	Fiji	Feb-00	Sep-07	Apr-08
Adviser – Water Resources, Supply & Sanitation	Vacant				
Senior Project Adviser – Energy	Jan Cloin	Netherlands	Nov-03	Dec-06	Apr-08
Project Manager – PIESAP Project	Gerhard Zieroth	Germany	Aug-04	Aug-07	Aug-08
Adviser – Water Use Efficiency	Mathias Kleppen	Norway	Mar-06	Feb-07	Apr-08
Adviser – Energy	Rupeni Mario	Fiji	Oct-98	Apr-08	Apr-11
Regional Project Development Officer	Rhonda Bower	Fiji	Nov-98	Jul-08	Dec-10
Project Adviser – IWRM	James Dalton	United Kingdom	Mar-07	Mar-08	Apr-09
Regional Project Coordinator – HYCOS	Llyod Smith	Australia	Feb-07	Feb-07	Feb-10
Regional Project Adviser – HYCOS	Peter Sinclair	Australia	Nov-06	Nov-06	Nov-09
Programme Assistant – Community Lifelines	Pooja Pal	Fiji	May-06	May-06	May-09
Programme Officer – Water Quality Monitoring Capacity	Tasleem Hasan	Fiji	Mar-05	Jun-08	Jun-09
Project Officer 7 – ICT Network and Security	Graeme Frost	Fiji	Mar-92	Jan-07	Dec-09
Project Officer 8 – WASH Officer	Kamal Khatri	Fiji	Feb-05	Feb-07	Sep-08
Project Officer 9 – Energy	Koin Etuati	Kiribati	Jun-06	Jun-07	Jun-09
Project Officer 10 – Energy	Frank Vukikomoala	Fiji	Mar-07	Mar-08	Mar-09
Project Officer 11 – Water Safety Plans	Davendra Nath	Fiji	Jan-06	Jan-06	Feb-08
Project Officer 12 – HYCOS	Linda Yuen	Fiji	Jun-05	Jan-07	Dec-09
Project Officer 13 – HYCOS	Komal Raman	Fiji	Jan-06	Jan-07	Dec-09
Project Officer 14 – Water Partnerships	Sanjeshni Naidu	Fiji	Aug-05	Aug-07	Feb-09
Project Officer 15 – GIS & Remote Sensing	Elizabeth Lomani-Whippy	Fiji	Feb-04	Jan-08	Dec-10
Project Officer 16 – GIS/RS & ICT	Joy Papao	Solomon Islands	Jun-04	Jun-08	Jun-11
Project Officer 17 – Water Sector	Arieta Navatoga-Sokota	Fiji	Oct-03	Mar-06	Mar-09
Assistant Project Officer I – Water Quality	Vacant				
Assistant Project Officer II – Water & Sanitation	Vacant				
Assistant Project Officer III – IWRM	Fane Waqa	Fiji	Feb-07	Feb-08	Feb-09
Project Officer 18 – GIS & Remote Sensing	Vilisi Tokalauvere	Fiji	Feb-04	Feb-06	Dec-07
Project Officer 19 – HYCOS	Tukatara Tangi	Cook Islands	Sep-04	Aug-06	May-08
Energy Support Officer	Atishma Lal	Fiji	Jun-07	Jul-08	Dec-08
EU/EDF 8 Graduate Student Attachment	Etuate Cocker	Tonga	Mar-07	Jan-08	Dec-08
Trainee Attachment – Water	Arun Chand	Fiji	Feb-07	Jan-08	Dec-08
Trainee Attachment – Energy	David Tamanallon	FSM	Mar-08	Mar-08	Dec-08
Trainee Attachment – ICT	Litia Gaunavou	Fiji	May-08	May-08	Dec-08
Trainee Attachment – Energy	Ivan Krishna	Fiji	Aug-08	Aug-08	Dec-08
Trainee Attachment – CLP	Hefford Panapio	Solomon Islands	Sep-08	Sep-08	Dec-08

COMMUNITY RISK PROGRAMME

Manager Community Risk	Moses Sikiyou	Fiji	Oct-06	Oct-06	Oct-09
Risk Analyst Specialist	Michael Bonte	Germany	Jun-03	Jan-08	Dec-08
Disaster Mitigation Adviser	Vacant				
Programme Director – PDRMP	Kathryn Hawley	USA	Feb-01	Aug-06	May-08
Adviser Sustainable Development	Netatua Prescott	Tonga	Aug-04	Jan-08	Dec-08
Adviser – Hazards Assessment	Litea Biukoto	Fiji	Apr-03	Jul-07	Dec-08
Senior Adviser – CRP	Noud Leenders	Netherlands	Nov-03	Nov-06	Nov-08

TAF/OFDA Training Support Adviser	Vacant				
TAF/OFDA Materials Development Specialist	Emele Matawaqa	Fiji	Aug-06	May-08	Dec-08
Research and Planning Officer	Vacant				
Programme Assistant – Community Risk	Asenaca Rokamanalagi	Fiji	Apr-05	Jan-07	Dec-09
Information & Database Management Adviser	Jutta May	Germany	Aug-06	Aug-07	Dec-08
Junior Researcher	Fane Ravula	Fiji	May-07	Nov-07	Nov-08
Trainee Attachment – PDN	Sereima Kalouniviti	Fiji	Feb-08	Feb-08	Feb-09
Trainee Attachment – PDN	Shabnam Ali	Fiji	Jul-08	Jul-08	Apr-09
CORPORATE SERVICES					
Manager Corporate Services	Mohinish Kumar	Fiji	Mar-98	Sep-06	Sep-09
Senior Adviser – Technical Editor	Mereseini (Lala) Bukarau	Fiji	Nov-85	Sep-06	Sep-09
Accountant	Lucia Kafoa	Fiji	May-06	May-06	May-09
Adviser – ICT/CS Technical	Sakaio Manoa	Tuvalu	Jan-04	Aug-08	Aug-11
Conference & Travel Officer	Laisa Baravilala-Baoa	Fiji	Jul-87	May-06	May-09
Administration Officer	Karen Datta	Australia	Jul-01	Jul-07	Jul-10
Receptionist/Clerk	Unaisi Bainiloga	Fiji	Feb-87	Jan-07	Dec-09
Driver/Clerk	Enele Gaunavou	Fiji	Jul-88	Jan-07	Dec-09
Office Assistant/Cleaner	Salestino Niu Daurewa	Fiji	Sep-87	Jan-07	Dec-09
Finance Services Officer	James Ram	Fiji	May-00	Jan-06	Dec-08
Assistant Finance Officer I	Emi Nofaga	Fiji	Aug-02	Mar-08	Mar-09
Assistant Finance Officer II	Asinate Nawamea	Fiji	Dec-05	Jun-08	Jun-09
Project Officer 19 – Library	Dorene Naidu	Fiji	Sep-04	Sep-07	Sep-10
Project Officer 20 – Publish./Graphic Arts	Sailesh Kumar Sen	Fiji	Jan-08	May-08	May-11
Project Officer 21 – Web Developer	Vacant				
Project Officer 22 – ICT Training	Avinash Prasad	Fiji	Jun-99	Jan-07	Jan-08
Administrative Assistant – SOPAC/EU Project	Subha Ram	Fiji	Sep-04	Jan-08	Dec-08
Administrative Assistant	Arishma Lal	Fiji	May-06	Aug-08	Aug-09
Assistant Project Officer IV – Publications/Library	Elenoa Rokodi	Fiji	Feb-03	Feb-08	Feb-09
Finance Officer Projects	Mohammed Irfaq	Fiji	Oct-07	Oct-07	Oct-10
Security Officer	Cama Temo	Fiji	Sep-02	Jan-08	Dec-08
Watchman/Cleaner	Ajay Chand	Fiji	Dec-00	Aug-08	Aug-09
Technical Assistant	Setareki Ratu	Fiji	Oct-86	Jan-08	Dec-08
Assistant Editor	Lore Ratuwaya	Fiji	Feb-07	Mar-08	Mar-09
Finance Clerical Officer	Ritesh Chandra	Fiji	Jan-07	Feb-08	Nov-08
Carpenter	Nand Kumar	Fiji	Jun-98	Jan-08	Dec-08
Gardner	Are Waione	Fiji	Mar-96	Jan-08	Dec-08
Assistant Carpenter/Handyman	Arun Kumar	Fiji	Feb-07	Sep-07	Apr-08
Handyman	Jitendra Sigh	Fiji	Mar-07	Jun-08	Jun-09
Handyman	Alfred Singh	Fiji	Jun-08	Jun-08	Jun-09
Office Cleaner	Reijeli Luma	Fiji	May-06	Jan-08	Dec-08
Trainee Attachment – Admin	Libotha Kaminaga	Marshall Islands	Aug-07	Aug-07	Jan-08
Trainee Attachment – PLU	Navneet Lal	Fiji	Jan-08	Jan-08	Dec-08
Trainee Attachment – Finance	Ashnita Kumar	Fiji	Jun-08	Jun-08	Jul-08
Trainee Attachment – ICT	Digitaki Tuberi	Fiji	May-07	Jan-08	Dec-08

Appendix 4: Acronyms

ADB	– Asian Development Bank	GP/DRR	– Global Platform for Disaster Risk Reduction
ADPC	– Asian Disaster Preparedness Center	GPS	– Geographic Positioning System
ACP	– Asian, Caribbean, Pacific	GRIP	– Global Risk Identification Platform
APCICT	– Asia Pacific ICT Center	GWP	– Global Water Partnership
ASEAN	– Association of Southeast Asian Nations	FOSS	– Free and Open Source Software
ATWS	– Australian Tsunami Warning System	HfA	– Hyogo Framework for Action
AusAID	– Australian Agency for International Development	HYCOS	– Hydrological Cycle Observing System
AVI	– Australian Volunteers International	IAP	– ISDR Asia Partnership
AYA	– Australian Youth Ambassadors	IAS	– Institute of Applied Science (USP)
BoM	– Bureau of Meteorology	ICT	– Information and Communications Technology
CCRT	– Climate Change Round Table	ICT-WG	– Information and Communications Technology Working Group (CROP)
CEO	– Chief Executive Officer	ICU	– (Pacific) Island Climate Update
CGPS	– Continuous Global Positioning System	IFRC	– International Federation of Red Cross and Red Crescent Societies
CIP	– Country Implementation Plan	IFS	– Instrument of Stability (EU)
CLP	– Community Lifelines Programme	IOC	– Intergovernmental Oceanographic Commission
CROP	– Council of Regional Organisations of the Pacific	IOI	– International Ocean Institute (Pacific Islands in USP)
CRP	– Community Risk Programme	IOSN	– International Open Source Network
CSD	– Commission on Sustainable Development (UN)	IRP	– International Recovery Platform
CTA	– Technical Centre for Agriculture and Rural Cooperation (Netherlands)	ISIF	– Information Society Innovation Fund
DEM	– Digital Elevation Model	ISOC	– Internet Society
DM	– Disaster Management	ISP	– Internet Service Provider
DRM	– Disaster Risk Management	IUCN	– International Union for Conservation of Nature
DRR	– Disaster Risk Reduction	IWRM	– Integrated Water Resources Management
DWSP	– Drinking Water Supply Planning	LAN/WAN	– Local Area Network/Wide Area Network
EC	– European Commission	LED	– Light Emitting Diode
eCS	– extended Continental Shelf	LIDAR	– Light Detection And Ranging
EDF	– European Development Fund	LLEE	– Live and Learn Environmental Education
EEAP	– Energy Efficiency Action Plan	LPG	– Liquid Petroleum Gas
EEZ	– Exclusive Economic Zone	MDG	– Millennium Development Goal
EMA	– Emergency Management Australia	MELAD	– Ministry of Environment, Lands and Agricultural Development (Kiribati)
ENSO	– El Nino Southern Oscillation	MoU	– Memorandum of Understanding
EPA	– Environmental Protection Agency	MVN	– Melanesian Volcanological Network
EU	– European Union	NAP	– National Action Plan
EUEF	– European Union Energy Facility	NDMO	– National Disaster Management Office
EWG	– Energy Working Group	NDMP	– National Disaster Management Plan
FDC	– Foundation for Development Cooperation	NGO	– Non-Government Organisation
GA	– Geoscience Australia	NIWA	– National Institute for Water and Atmospheric Research (New Zealand)
GAR	– Global Assessment Report on Disaster Risk Reduction	NHS	– National Hydrological Services
GEF	– Global Environment Facility	NM	– Nautical Mile
GeoCMS	– Geospatial Content Management Server	NMS	– National Meteorological Services
GFDRR	– Global Facility for Disaster Reduction and Recovery	NOAA	– National Oceanographic and Atmospheric Administration (US)
GIS	– Geographic Information System	NRGT	– Natural Resources Governance Team (SOPAC)
GPA	– Global Programme for Action for the Protection of the Marine Environment from Land-Based Sources of Pollution	NZAID	– New Zealand Agency for International Development

NZMoE	– New Zealand Ministry of Environment	RS	– Remote Sensing
NZODA	– New Zealand Overseas Development Agency	RTK	– Real Time Kinematic
ODI	– Overseas Development Institute	SD-WG	– Sustainable Development Working Group (CROP)
OFDA	– Office of US Foreign Disaster Assistance	SEAFRAME	– Sea Level Fine Resolution Acoustic Measuring Equipment
OIP	– Ocean and Islands Programme	SIDS	– Small Island Developing States
OTEC	– Ocean Thermal Energy Conversion	SOPAC	– Secretariat of the Pacific Islands Applied Geoscience Commission
PACC	– Pacific Adaptation to Climate Change	SPC	– Secretariat of the Pacific Community
PacINET	– conference organised by the PICISOC and is the leading Information and Communications Technology conference in the Pacific Islands	SPLOS	– Documents of the Meeting of States Parties to the United Nations Convention on the Law of the Sea
PACTAM	– Pacific Technical Assistance Mechanism	SPREP	– Secretariat of the Pacific Regional Environment Programme
PAS	– Pacific Alliance for Sustainability	SPSLCMP	– South Pacific Sea Level and Climate Monitoring Project
PCS	– Palau Conservation Society	SRP	– Societe de Recherche du Pacifique
PDC	– Pacific Disaster Center	TAF	– The Asia Foundation
PDN	– Pacific Disaster Net	TCDT	– Tonga Community Development Trust
PDRMPN	– Pacific Disaster Risk Management Partnership Network	TEC	– Tuvalu Electricity Corporation
PEG	– Pacific Energy and Gender Network	UN	– United Nations
PEGSAP	– PEG Strategic Action Plan	UNCLOS	– United Nations Convention on the Law of the Sea
PEMM	– Pacific Energy Ministers’ Meeting	UNDOALOS	– United Nations Office of Legal Affairs/Division for Ocean Affairs and the Law of the Sea
PGSP	– Pacific Governance Support Program (Australia)	UNDP	– United Nations Development Programme
PIC	– Pacific Island Country	UNESCO	– United Nations Educational Scientific and Cultural Organisation
PICISOC	– Pacific Chapter of the Internet Society	UNESCO-IHE	– UN Institute for Higher Water Education
PIEPSAP	– Pacific Islands Energy Policy and Strategic Action Planning	UNEP GRID	– A collaborating centre of the United Nations Environment Programme (UNEP), established in 1989 by the Government of Norway as a Norwegian Foundation
PIFACC	– Pacific Islands Framework for Action for Climate Change	UNICEF	– United Nations Children’s Fund
PIFS	– Pacific Islands Forum Secretariat	UN/ISDR	– United Nations International Strategy for Disaster Reduction
PI-GCOS	– Pacific Global Climate Observing System	UN/OCHA	– United Nations Office for the Coordination of Humanitarian Affairs
PI-GOOS	– Pacific Global Ocean Observing System	UNU	– United Nations University
PIGGAREP	– Pacific Islands Greenhouse Gas Abatement through Renewable Energy Project	UPS	– Uninterruptible Power Supply
PIRMBIS	– Pacific Islands Regional Maritime Boundaries Information System	US	– United States
PITA	– Pacific Islands Telecommunications Association	USAID	– United States Agency for International Development
PMESCO	– Pacific Micro Energy Service Companies	USD	– United States Dollar
PPA	– Pacific Power Association	USP	– University of the South Pacific
PPDRM	– Pacific Platform for Disaster Risk Management	WASH	– Water Supply, Sanitation and Hygiene
PPDS	– Pacific Plan and Digital Strategy	WB	– World Bank
PWA	– Pacific Water Association	WDM	– Water Demand Management
RAP	– (Pacific) Regional Action Plan on Sustainable Water Management	WHO	– World Health Organisation
REEEP	– Renewable Energy and Energy Efficiency Partnership	WMO	– World Meteorological Organization
REM	– Regional Energy Officials’ Meeting	WQM	– (Pacific) Water Quality Monitoring
REP-5	– Renewable Energy Programme - Support to the Energy Sector in Five ACP Pacific Islands (European Union)	WSP	– (Pacific) Water Safety Planning
REWS	– Regional Early Warning Strategy	WSSCC	– Water Supply and Sanitation Collaborative Council
RIF	– Regional Institutional Framework		
RIP	– Reference Image Points		
RMI	– Republic of the Marshall Islands		
ROC	– Republic of China (Taiwan)		

