

# ***SOPAC***

ANNUAL REPORT SUMMARY

## 2007



Pacific Islands Applied Geoscience Commission

# ***SOPAC***

## **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

## **DISCLAIMER**

The mention of products, technologies, companies does not imply recommendation or endorsement by SOPAC, neither does it imply that these are necessarily the best available for the purpose.

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## Director's Foreword

Cristelle Pratt

This annual report summary provides a snapshot of key actions that the SOPAC Secretariat accomplished in the reporting period September 2006 to November 2007, as well as providing a synopsis of the issues and opportunities within the areas of our technical competence that we believe need to be considered and addressed.

Having passed the midway point of my tenure as Director of SOPAC, I would like to take the opportunity of this foreword to the Annual Report Summary for 2007 to reflect on the progress that we have made since 2004 and to look at the opportunities that lay ahead for SOPAC.

The Pacific Islands Region, SOPAC members and our development partners will recall the flurry of activity, at global, regional and national levels, leading up to 2004 and into 2005 of negotiations and endorsements of various declarations, policies and strategic plans of action such as the Mauritius Strategy of Implementation, the Hyogo Framework for Action – Building the Resilience of Nations & Communities to Disasters, the Pacific Plan as well as the SOPAC Strategic Plan 2005 – 2009.

These and other policy and planning instruments have provided the strategic basis upon which SOPAC responds, in respect of implementation against those development priorities that can be supported through our applied science and technical remit. The Secretariat remains extremely mindful that the services and solutions provided to our island membership support them toward meeting some of the commitments that they have made at global, regional and national levels. For example, achievement of Millennium Development Goals in areas that are relevant to our mandate.

The challenge of implementation has been foremost in our minds at the Secretariat and we have been successful in diversifying and increasing our funding base over the medium term to ensure this. A threefold increase in our annual budget has and will enable implementation of priority actions across all three of SOPAC's programme areas of Ocean and Islands, Community Lifelines and Community Risk.

*"We continue to recognise the need to link the use of science and management to protect natural resources together with a sound policy framework that reaches from the regional level right down to the local level to ensure those most in need benefit from our scientific and technical work."*

SOPAC Director, Cristelle Pratt

I am pleased to share that we are making some significant inroads into mobilising resources and implementing several of the key initiatives identified under the Kalibobo Roadmap of the Pacific Plan. For example, implementing priorities outlined in the Pacific Regional Action Plan on Sustainable Water Management through initiatives such as the EU Water Facility funded regional initiatives Pacific HYCOS and the Pacific IWRM. Other aspects of integrated water resources management are being addressed through initiatives for water safety, water quality and water demand – all extremely important for the sustainable management and use of this critical natural resource upon which our lives depend. Identification of disaster risk reduction priorities at national level as per the Pacific Plan and concrete plans of action for their implementation under our Community Risk Programme is also receiving growing support. As well we are exploring other delivery modalities to support members in meeting their development objectives such as working with eight Pacific ACP States to implement actions under their EDF9 B Envelope allocations toward disaster risk reduction and disaster management.

Underpinning the SOPAC programme is the emphasis on a multidisciplinary approach for establishing a more integrated solution. The increased realisation of the complexity and interdependencies within our living, vibrant world demands greater multidisciplinary approaches and cooperation. It also means that the scientific and technical capacity has to be reemphasized and developed – not only because it is the major mandate of SOPAC but more because it is the foundation of future opportunities for our member countries.

We continue to approach implementation with vigour and enthusiasm and realise that our achievements are highly dependent on the good relationships and partnerships that we have forged and that we continue to nurture and value. We work with various technical ministries and departments at the national level, with donors that see fit to provide resources necessary to enable implementation of development priorities which resonate with their support strategies and, with multi-lateral and national agencies that we work closely with to realise the delivery of various scientific and technical solutions as well as the policy and planning support that we are responsible for providing.

SOPAC continues to develop ways to ensure more effective service delivery. Indeed excellence in the quality, relevance and timeliness of its regional and national activities is the modus operandi of SOPAC's operation. Furthermore we have also been examining ways and means of more cost-effective delivery whilst still maintaining and/or improving quality of services. It is my opinion that SOPAC is moving ahead in the right direction with these developments toward continual improvement.

Outside of a busy year of growth as well as delivery of an exciting technical work programme, we have also needed to consider the 2007 Forum Communiqué and more specifically Paragraph 19(b) on the matter of the Regional Institutional Framework wherein it states "the need to rationalise the functions of SOPAC with the work programme of SPC and SPREP with the view to absorbing those functions of SOPAC into SPC and SPREP".

The SOPAC Governing Council in its 2007 meeting in Tonga considered the Leaders Communiqué and "agreed to accept the challenge offered by the 2007 Leaders Communiqué." Much of SOPAC's time and resources will be needed to facilitate the course of action agreed to by Council based on the principles of due process and good governance.

The period covered by this Report thus came to a close not only with a certain culture of uncertainty but also of hope.



July 2008

## KEY WORK PROGRAMMES

### Ocean and 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

## SOPAC in 2007

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 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 is funded by member country contributions and supported by the following donors: Australia (including the Australian Volunteers International (AVI), and Bureau of Meteorology (BOM) Australia), Denmark, the European Union, Fiji Islands, New Zealand, The Asia Foundation/Office of US Foreign Disaster Assistance (TAF/OFDA), Taiwan/ROC, United Kingdom and various UN agencies (inclusive of the Global Environment Facility (GEF) and UNESCO/IOC). The following partners also financially supported specific activities in 2007: the Australian Youth Ambassadors (AYA), 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), Pacific Chapter of the Internet Society (PICISOC), Australasian Fire Authorities Council (AFAC), International Federation of the Red Cross and Red Crescent Societies (IFRC), and Foundation for Development Cooperation (FDC).



# Ocean & Islands Programme

## SUMMARY OF KEY HIGHLIGHTS

The major achievements and key highlights of the Ocean and Islands Programme (OIP) for 2006/2007 are reported under its three component headings of:

- Resource Use Solutions
- Monitoring Physical and Chemical Change in Ecosystems
- Ocean Governance

### Resource Use Solutions

#### Maritime Boundaries

The Pacific Islands Regional Maritime Information System (PIRMBIS) has continued to be updated and maintained. PIRMBIS contains base line information from maps, and satellite imagery, as well as the computed critical basepoints, and the extrapolated notional maritime boundaries for American Samoa, Cook Islands, Fiji, Federated States of Micronesia, Kiribati, Nauru, Niue, Palau, Marshall Islands, Tokelau, Tuvalu and Vanuatu. Work over the last twelve months has included completion of critical base points and maritime limits, verification, GPS survey and data post processing, reef delineation and production of an updated Pacific EEZ map. Existing treaties have also been incorporated into PIRMBIS and updated as appropriate.

Desktop studies to further assess the potential for Extended Continental Shelf (ECS) beyond the 200 nautical mile limit were commissioned for Federated States of Micronesia, Kiribati, Palau, Solomon Islands, Tuvalu and Vanuatu, with results and data being presented to the mentioned countries in early 2007. Fiji, Papua New Guinea and Tonga are pursuing their desktop studies independently. Nine countries have identified areas of potential for ECS claims and a

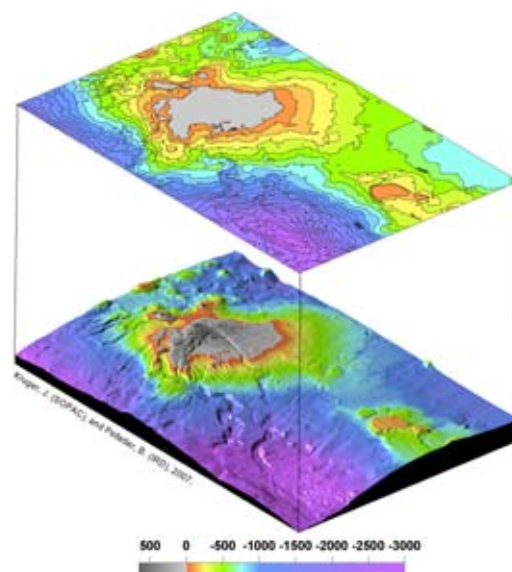
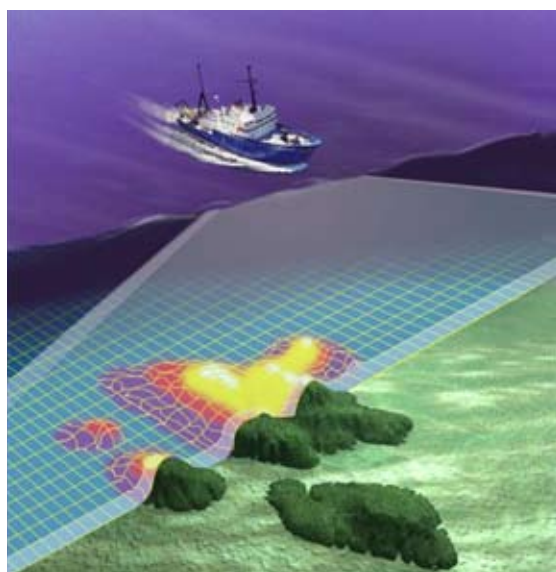
# ocean & islands programme

high level ECS meeting was hosted in Brisbane in February 2007, to present the findings to national technical focal points. Following these discussions a meeting was held at Geoscience Australia with SOPAC, Papua New Guinea, Federated States of Micronesia and Solomon Islands technical officials meeting to discuss the way forward in relation to progressing joint, partial ECS claims, as well as to undertake training in the use of GEOCAP software for boundary delimitation. A GEOCAP licence was also purchased for SOPAC (using AusAID funds) to assist member countries to further define their maritime boundary claims. Technical assistance from Geoscience Australia has been secured for three person months per year until 2010. This is particularly significant as Geoscience Australia plays a key and critical role in validating and quality assuring the technical solutions provided by SOPAC to its member states.

## Data and Information Storage

Transcription of the SOPAC Petroleum Databank held at Geoscience Australia is now almost complete and most of the country datasets have been received by SOPAC (with receipt of the remaining data occurring by December 2007). Appropriate climate controlled storage has been organised in Australia for the original hard copy data due to space constraints at both SOPAC and Geoscience Australia. On completion of the data transformation initiative, digital datasets will be provided to those countries that have data held within the SOPAC Petroleum Databank. A full set of all data and information will continue to be held and maintained by the Secretariat for participating member countries.

An AVI Volunteer joined OIP as Coordinator – Ocean Information Systems in March 2007 with the principal terms of reference to design and develop data storage, handling and retrieval capacity for the OIP. Presently OIP marine survey data is stored at multiple locations and in multiple formats which are not easily searchable or retrievable. Open-source database software (Linux, GeoNetwork, GeoServer and others) are being or have been tested for applicability for OIP storage needs and a portal (<http://iprc.sopac.org.fj/geonetwork/srv/en/main.home>) has been established through the existing SOPAC server facility. Whilst aspects of the system remain under development and trial. The new site is presently being populated with recent EDF8 and 9 bathymetric survey metadata. Exploration of possible regional hosts to allow the establishment of a “mirror” site is underway to ensure ease of access, data security and data back-up.



## Aggregate Resources

An integrated approach to reducing shoreline vulnerability through the replacement of intensive beach mining has been undertaken in the urban atolls of South Tarawa, Kiribati and Majuro, Marshall Islands. Benefit cost analyses of beach mining and the assessments of alternative aggregate resources are complete. Survey and resource characterisation is completed and a hydrodynamic (water flow) model has been developed for Tarawa Lagoon to improve understanding of the possible impacts of lagoon basin mining. This work was delivered in Tarawa during a four-day workshop which was convened to demonstrate the integrated approach and build national capacity and awareness. A fifteen-minute documentary outlining this work programme was also filmed as a working example of an integrated approach to a common PIC resource use issue.

Assessments of beach and river aggregate mining have been undertaken in the Solomon Islands (Honiara), Fiji (Navua and Sigatoka Rivers) and Papua New Guinea (Waramei and Bili Rivers). GIS management tools, maps and guidelines to assist local authorities to use aggregate resources in a more sustainable manner have been produced.

Technical assessments of potential of terrestrial aggregate resources were also completed for Samoa and Vanuatu and are underway in the Cook Islands, Palau and Nauru. Workshops in relation to this work and the delivery of related products, as well as discussion of environmental and policy issues have been held in the Solomon Islands, Samoa and Vanuatu.

## Economic Analysis

Economic analysis conducted under SOPAC include cost benefit analysis, an economic tool to aid social decision-making and used to guide and evaluate the desirability of a given intervention. Whilst under the Ocean and Island Programme management umbrella, each of SOPAC's technical programmes have embraced the potential of this tool to assist in developing appropriate resource use solutions. The following studies were undertaken in the last reporting period; Kiribati (aggregate supply); Tonga (renewable energies), Cook Islands, Solomon Islands (renewable energies) and Nauru (renewable energy for rural electrification and energy supply options); Fiji and Samoa (flood early warning and management systems).



# ocean & islands programme

## Marine habitat characterisation

Crucial to marine resource management and protection, such as for sustainable fisheries development and management, is a detailed understanding of seafloor habitat potential. The OIP's Marine Survey component has made significant advances in response to this important regional need. SOPAC took a lead role in the organisation of the annual International GeoHab Conference, which was convened in Noumea, New Caledonia in June 2007. GeoHab brings together world leaders in deepwater marine habitat mapping. Geoscience Australia conducted an introductory deepwater habitat mapping workshop with SOPAC for PIC representatives prior to GeoHab and a special meeting was also held in order to present, explain and handover OIP products of the EDF8 and 9 Project. Bathymetric products delivered under the EDF8 and 9 Project included charts for Fiji, Kiribati, Niue, Nauru, Papua New Guinea, Republic of Marshall Islands, Samoa, Tonga, Tuvalu, Solomon Islands and Vanuatu.

Detailed interpretation of geomorphologic (seabed) features for the Yasawa Waters, Fiji is being completed, in cooperation with the Fiji Hydrographic Department. This activity also represents a major ongoing capacity building exercise for the Department who were trained in Multibeam survey techniques. Similar work has also been completed for Niue and this form of 'value adding' to existing and recently acquired bathymetric data is being considered for a number of EDF marine survey locations.

## Monitoring Physical and Chemical Change in Ecosystems

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

SOPAC continues its cooperation with the Bureau of Meteorology (Australia) and Geoscience Australia to maintain and calibrate cGPS (Constant GPS – accurate measurement of vertical land movement) and SEAFRAME (sea level) gauges for all beneficiary States and has recommended that both Niue and Palau be included in the Project. A SPSLCMP Regional Communications and Coordination Adviser was recruited in October 2006. A major achievement was the successful development of a Communication Strategy for the Project and organisation of a number of IPCC side events (Fiji, Samoa, Cook Islands and one in Tonga during the 36th SOPAC Session) in the margins of relevant regional meetings. These side-events enabled international climate scientists to present, to a broad range of key national and regional stakeholders, information on climate change science and related issues and to answer questions. The focus of the mentioned IPCC side events being to share and discuss the results of the recent IPCC 4th Assessment Report.

### Bathymetric (seafloor mapping) surveys

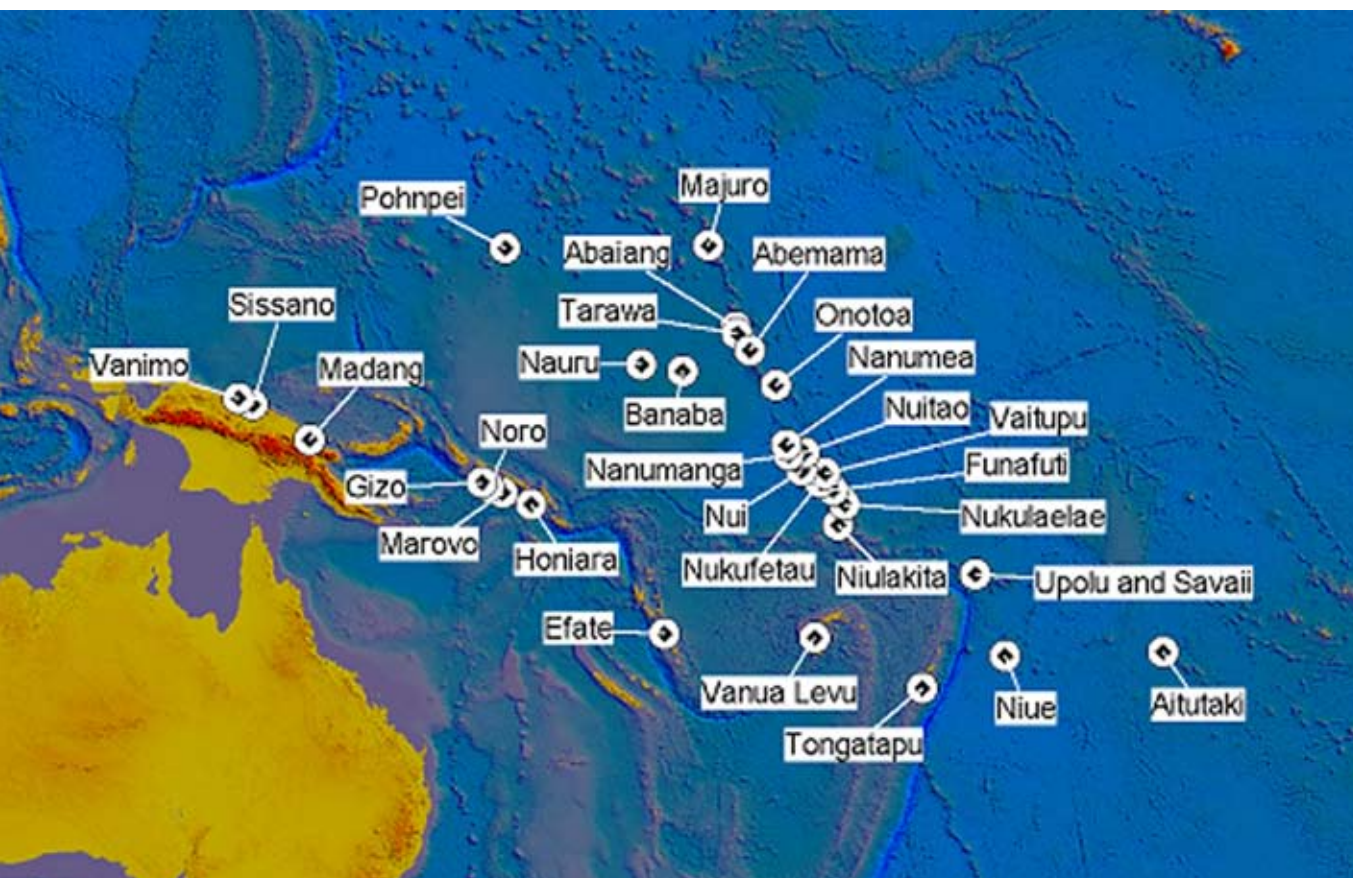
Whilst seafloor mapping (bathymetric survey) has been undertaken to successfully address a range of issues in a variety of locations, these products will continue to remain as accurate, critical baseline information to our understanding of amongst others navigation, management and resource use solutions, coastal erosion, sedimentation and geological hazards.

Bathymetry is also the essential baseline information needed for marine habitat mapping and all forms of water movement modelling. Modelling refers to computer based programmes which can tell us how water moves in our marine environments. Modelling can be applied to improve our understanding and resolution for addressing such issues as pollution, erosion, wave run-up and tsunami modelling.

A significant portion of the Programme's time and resources in 2007 was spent on the processing of multi-beam data from surveys completed in 2006 and 2007 in Papua New Guinea (Madang, Sissano and Lae), Federated States of Micronesia (Pohnpei), Marshall Islands (Majuro) and also developing appropriate map products from these processed data sets. A significant amount of these processed data was presented as bathymetric charts to the respective member states in June 2007.

## Hydrodynamic (water movement) modelling

Dependant on the collection of accurate bathymetric and oceanographic data, hydrodynamic modelling is a tool of unparalleled importance when considering a range of marine resource use and environmental questions. OIP has made a significant investment in computer hardware, software (MIKE 21) and technical capacity to enable the integration of our existing seafloor mapping capacity into a broader modelling approach. Examples of models in development during the reporting period are; Kiribati (Tarawa Lagoon – sediment plume studies and water residence times); Samoa (Apia Harbour – consideration of outfall placement), Tonga (Fanga'uta Lagoon – water quality, circulation patterns and residence times); and Tongatapu Lagoon – improved understanding of circulation patterns (a SOPAC-SPC collaborative effort).



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## PI-GOOS (Pacific Islands - Global Ocean Observing System)

The incumbent PI-GOOS Coordinator was recruited in mid-2007, with the previous incumbent leaving post in late 2006. Activities since mid-2007 have included reinforcing existing, as well as developing new partnerships throughout the Pacific region and internationally in an effort to ensure momentum and further development of the PI-GOOS Regional Alliance. This includes re-activation of the PI-GOOS Advisory Committee, which will provide the guidance for the development of Ocean Products that have been requested by SOPAC Member Countries.

Other activities include securing an ocean data server to store ocean information at SOPAC for use by member countries and mirrored at the International Pacific Research Centre in Hawai'i. The Ocean Server will be linked to the Ocean Information WebPortal (developed in 2005). Regional and CROP coordination of a proposal to establish a "Regional Biodiversity Data base" and investigation of the development of a historical image database to serve as a regional baseline monitoring and resource use solution tool continues.

## Ocean Governance

SOPAC remains involved and committed to progressing the implementation of the Pacific Islands Regional Oceans Policy and Framework for Integrated Strategic Action (PIROF-ISA), through active participation in the CROP Marine Sector Working Group. SOPAC has sourced funding through the Global Oceans Forum/GEF to facilitate activities in relation to development or National Ocean Policies and/or "mainstreaming" the PIROF-ISA in development planning at the national level.

The Senior Natural Resources Governance Adviser, recruited to SOPAC in March 2006 is providing guidance and input on social and economic issues to inform natural resources management across all three technical programmes.



## NEW INITIATIVES AND EMERGING ISSUES

To highlight both current and emerging trends and issues, which have significant implications for the effective delivery of the Ocean and Islands Programme (OIP). These issues are presented under the relevant area of the three component headings of the OIP:

- Resource Use Solutions
- Monitoring Physical and Chemical Change in Ecosystems
- Natural Resources Governance

### Resource Use Solutions

#### SOPAC Petroleum Databank and related databases

Covering Fiji, Tonga, Papua New Guinea, Vanuatu and the Solomon Islands the SOPAC Petroleum Data Bank (P-DB) was developed in the 1980's under SOPAC auspices to rescue and house data acquired under Oil Exploration Licenses by petroleum exploration companies. This information was supplemented by other geological and geophysical information and data relevant to petroleum exploration (such as the marine geophysical cruises under the Tripartite Cruise Programme involving Australia, New Zealand and the United States in the 1980's). The P-DB is a critical information source for countries, for petroleum exploration companies and other users of such data and information. Scanning and digitisation of data stored on various format tape reels, seismic rolls, documents and reports in the P-DB is now, nearly complete and hard copies of these have been moved to a temperature controlled storage facility in Canberra, as Geoscience Australia (GA) requires the existing storage space for its own needs. Digitised data, once verified and quality checked, will be held at SOPAC, as part of its marine data collection, and countries will also be provided with a copy of their dataset.

Current high oil prices have resulted in renewed interest in oil and gas exploration both globally, as well as within the region and a consequent increased demand for access to the Data Bank. This is likely to continue and housing the databank at SOPAC and managing requests for information will therefore have resource implications for the Secretariat.

The provision of access to this databank was discussed informally some 10 years ago. At the time, it was broadly agreed by the member countries that the data would be made available upon request by the custodian (SOPAC) and that SOPAC would retain a list of all those who requested data and what data was requested and ultimately supplied at cost of replication, media, transmittal and administration. It was also agreed that the custodian would report all details of access requests to the member countries on an annual basis.



## Ocean Information System

SOPAC has acted as a repository for numerous marine surveys and related datasets over the last 30 years. Much of this data has been collected at great expense and as such their combined worth total many millions of dollars. Due to continued advances in technology much of the data is now stored in inappropriate or inconvenient formats which do not facilitate easy transfer or digital storage.

Progression of technology has also greatly increased the scope to model and better understand phenomena such as natural hazards (such as inundation and impact from Tsunami) or support important activities such as defining extended Continental Shelf as articulated in Article 76 of the United Nations Law of the Sea Convention and further elaborated in the Technical Guidelines of the Commission on the Limits of the Continental Shelf. However, such work can only be undertaken where adequate baseline data exists. It is therefore crucial that all available data is retrieved, re-formatted and stored in such a way as to allow ready, preferably net-based access by all potential users.

OIP has developed an initiative (Ocean Information System – database) which will allow the compilation and fast convenient retrieval of contemporary and historical data. A senior AVI (Australian Volunteers International) volunteer, with database development expertise has been secured to begin the arduous task of assessing the many types of existing data held by SOPAC on behalf of member countries. Whilst significant and exciting progress has been made already, this initial effort has brought to light the magnitude of this task and reinforces the need to address this issue with ongoing and significant investment in staffing, equipment and funds.

## Integrated coastal vulnerability assessment

SOPAC has a unique capability in the region with specialist technical capacity and tools to develop practical, data-based approaches to regionally important issues of coastal vulnerability and assessment of the shores and coastlines of Pacific Islands. In light of climate change projections and associated sea-level rise and the potential impacts these phenomena will visit on our coastal communities and environments, SOPAC, recognises the crucial need to enhance coastal resilience through developing practical solutions to existing shoreline and coastal environmental and resource use pressures.



SOPAC has already made major, tangible contributions to this issue; for example, in Kiribati it mobilised a diverse and specialist team and coupled with a range of tools developed an integrated approach to coastal vulnerability in South Tarawa. This approach not only identifies and quantifies shoreline resource use pressures but has characterised appropriate alternative resources and has summarised the economic and environmental benefits of bolstering coastal resilience as opposed to taking no action. This work has successfully supported the Government of Kiribati in cooperation with the EU, to design a \$2.2 million programme to develop sustainable sand and gravel supply for construction purposes, improve coastal monitoring and planning and, enhance community awareness of coastal vulnerability issues.

The specialist technical capacity, skills and tools used to develop these integrated and tangible approaches to reduce coastal vulnerability, also directly support a range of other “acute” shoreline impact issues. Storm surge modelling, shoreline erosion assessment, tsunami modelling as well as sea-level rise related inundation modelling are examples of the various activities that can and are currently undertaken. Modelling and/or mapping of such hazards can only be undertaken if adequate baseline information is available. Pacific Island Countries (PICs) do not generally have sufficient baseline environmental information to allow this type of modelling or detailed hazard mapping. Modelling and hazard mapping are crucial tools for PICs to develop response, adaptation and mitigation strategies and as such, SOPAC needs to consider and support the continued development and enhancement of its marine and coastal analysis and assessment capacity.

In noting the vital contribution that this capacity already makes and the growing need for such work in the region, it is considered essential that SOPAC retains and enhances its marine and coastal assessment capacity. Over the last four years a highly skilled team with excellent Pacific know-how and knowledge has been developed with EU funding (EDF8 and 9 Reducing Vulnerability Project) and seeks to complement existing technical capacity of the OIP. The funding for the EDF9 component of the Reducing Vulnerability Project will cease in December 2008 and it is crucial that this established capacity remains at the service of SOPAC member countries and thereby allowing SOPAC to continue to deliver excellence against its marine and coastal survey and integrated coastal vulnerability assessment tasks, which remains critical priorities.

# ocean & islands programme

## Monitoring Physical and Chemical Change in Ecosystems

### Shoreline change, erosion, inundation and wave incursion

Shoreline vulnerability (erosion and wave incursion) of low-lying communities is an issue of immediate national and regional importance. Climate change is known to have resulted in accelerated sea level rise and increases in Sea Surface Temperature and these phenomena have profound implications to low-lying, tropical PIC shores, communities and ecosystems. Despite the pivotal importance of these issues to PIC communities there is presently no systematic, strategic regional approach to developing an understanding of these pressures on low-lying, vulnerable shores in PICs.

SOPAC, through the OIP has greatly developed its capacity in this area and has produced historical and ongoing shoreline monitoring for a number of locations. However there are additional technical expertise and funding resources that need to be secured to support the development of a regional, systematic response to this extremely critical development issue, for all member countries and territories.

Without an ongoing, systematic, data-based approach to this issue it is not possible to clearly and responsibly inform communities and countries (and the international community) of how our shores are responding to environmental change. If we can not clearly understand how sea-level rise and other pressures are impacting our shores our efforts to develop the best possible mitigation and adaptation responses will be greatly hampered. It is vital that just as sea level is monitored on a systematic basis across the region (such as the SPSLCMP, which is in its fourth phase), that shoreline response to climatic stress is also monitored and assessed on a regional, systematic basis. This will clearly and factually inform PICs of any developing trends or changes in response to climate change pressure and will support best possible practice in terms of an effective response.



## Tsunami Monitoring and Early Warning Systems

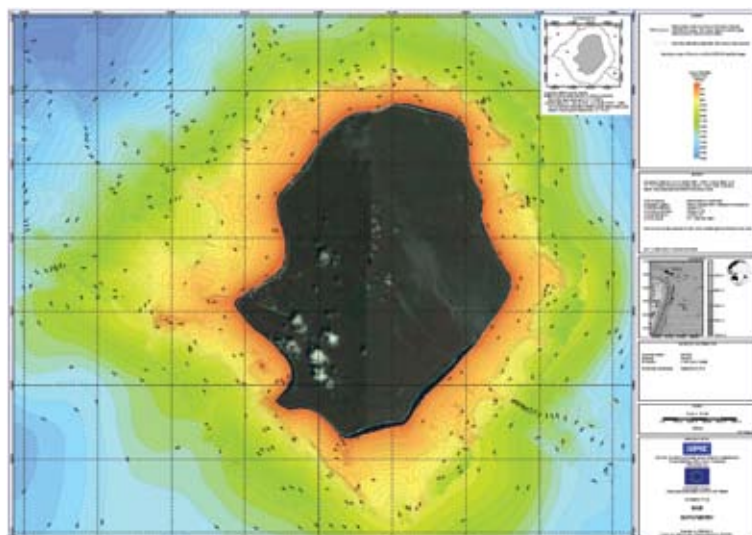
There has been significant global emphasis and activity on the issue of establishing and maintaining adequate tsunami monitoring and warning capabilities since the December 2004 event in the Indian Ocean and more recently the Solomon Island earthquake and tsunami events in early 2007. The need for reliable monitoring systems to effectively warn of tsunami occurrence has long been recognised, as well, as the need for modelling potential tsunami impacts and incursion, which will allow for data-based approaches to tsunami hazard response options to be determined.

SOPAC continues its partnership with Geoscience Australia, under funding for the Pacific Islands Region from the Australia Tsunami Warning System (ATWS) administered by AusAID, to develop a comprehensive risk assessment for the region. OIP's more technically focused work is presently being undertaken by a senior AVI based at SOPAC, who is developing data availability reports of PICs to allow an assessment of information gaps. This is necessary as localised site-specific tsunami modelling can only be undertaken where adequate bathymetric data [seafloor maps] and topography [land elevation] exist.

The recommendation of the Tsunami Working Group [SOPAC 33rd Session, 2004] which followed the South Pacific Tsunami Awareness Workshop (SPTAW) [July 2004] is immediately relevant. "Coordinate the investigation and development of a Regional Tsunami Information and Warning System for the South Pacific".

The need for integrated early warning systems has also been articulated within the Mauritius Strategy, the Hyogo Declaration and the recently developed Disaster Risk Reduction and Disaster Management – Framework for Action 2005-2015.

There is a great need for enhanced communication and coordination of all aspects of regional work related to tsunami and this includes effective coordination for research, threat, warning, response planning and modelling. SOPAC believes that due to the increasing volume of work and the diversity of Pacific Islands regional and Pacific Rim interests on this issue a regional coordinator would greatly facilitate and enhance progress and ultimately ensure that PIC interests are addressed in the best and most efficient manner.



# ocean & islands programme

## Topography (land elevation or height information)

Stakeholders of SOPAC may question why “Topography” is being raised as an emerging issue. The reason being that the absence of adequate topographic data throughout PICs is beginning to hinder progress on many hazard-related activities. Therefore the region’s ability to address many aspects of coastal vulnerability is severely hampered by the lack of adequate, accurate topographic (land height) information, especially for low-lying, coastal areas.

It is now widely recognised and accepted that accurate bathymetry (sea floor) information is vitally important to develop our understanding of near shore marine environments. The same can be said of accurate topographic information to support potential storm surge, tsunami and wave over-topping modelling and hazard mapping of islands.

SOPAC has the in-house technical capacity and tools to collect highly accurate bathymetric information. However, accurate bathymetry is only half of the story and must be accompanied by equally accurate topographic (land height) information if accurate and reliable models are to be developed to help us address, plan for and understand issues such as potential tsunami and storm surge wave incursion maps, sea-level rise inundation maps and storm-surge inundation, which are considerations as we live on and continue to further develop our coastlines.

## Habitat Mapping

SOPAC has through its multi-beam swath mapping and single channel seismic systems and technical capacity (for seafloor mapping and characterisation) has “traditionally” used these tools in support of: navigation such as assessing shipping lanes and harbour entrances to produce and correct hydrographic charts for maritime transport safety; seabed mapping and seismic surveys for identification of offshore aggregates, hazard mapping and, also for continental shelf delimitation.

Whilst SOPAC must remain firmly committed to continuing this important regional work, there is excellent scope to enhance and “value add” to the suite of seafloor mapping products by developing existing capacity and tools to support seafloor habitat characterisation.

Habitat mapping refers to collecting additional information during bathymetric surveys which will allow a greater level of confidence in the identification of types of biological habitats that exist on the sea floor and therefore support resource management and conservation efforts in respect of “ecosystem based” management (EBM) .

The principle of adopting an “ecosystem based” management (EBM) approach to ocean and island natural resource management is now becoming widely accepted. This requires the linking of science and information relating to the physical and chemical dimensions of ocean and island ecosystems with biological data and also the social dimensions of human interactions with those ecosystems.

In conjunction with OIP’s hydrodynamic modelling capacity (water flow and movement models of nearshore waters, reefs and lagoons) the combination of habitat and modelling information products has the potential to greatly support regional efforts to manage amongst others reefs, coastal (and possibly oceanic) fisheries, aquaculture and marine protected areas.

## Natural Resources Governance

### Maritime Boundary Delimitation and Extended Continental Shelf Claims

The 13th of May 2009, is the prescribed deadline for the completion and submission of all claims for eCS (extended continental shelf) of those coastal States to have ratified the United Nations Law of the Sea Convention on or before 13th May 1999. SOPAC continues to maintain its strong technical support to PICs with respect to the eCS. It commissioned desktop assessments for Palau, Federated States of Micronesia, Solomon Islands, Vanuatu, Kiribati and Tuvalu to determine their potential to prepare submissions toward claiming extensions of their continental shelf beyond 200 nautical miles. These States and also Papua New Guinea, Fiji and Tonga, who are undertaking similar desktop studies under independent arrangements, were identified in previous studies as having the potential to claim an extended Continental Shelf. The desk study suggested that four potentially could claim an eCS (Palau, Federated States of Micronesia, Solomon Islands and Kiribati). In the case of Vanuatu their potential eCS claim is predicated on resolution of an area of dispute with France. With the need to complete submissions by 13th May 2009, the mentioned PICs are being encouraged to proceed in preparing their submissions as a matter of urgency.

Apart from eCS issues, the agreement and ratification of boundaries between adjacent PICs is as important and critical an issue, given the relevance of the financial benefits to national economies derived from resources such as Tuna caught 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 American Samoa, Cook Islands, Fiji, Federated States of Micronesia, Kiribati, Nauru, Niue, Palau, RMI, Tokelau, Tuvalu and Vanuatu. In addition, data such as existing treaties have also been incorporated into PIRMBIS. SOPAC intends to work closely with remaining countries to determine the technical solutions of their maritime boundaries in 2008.

Despite the fact that the issues of boundary delimitation have been known for a considerable time, and the potential economic benefits possible to be derived, out of 47 known boundaries in the SOPAC region, some 29 still remain to be formally agreed. It is important therefore, that the need to define and ratify boundaries between adjacent states be raised at regional economic and political fora, as well as delimitation of the 200 M EEZ limits. In this regard SOPAC will undertake benefit-cost analysis of maritime boundary delimitation actions in 2008 as a first step to demonstrating the urgent need for PICs to progress this.





# Community Lifelines Programme

## SUMMARY OF KEY HIGHLIGHT

The major achievements of the Community Lifelines Programme are presented below under the three component headings:

- Resource Assessment, Development and Management
- Asset Management
- Advocacy and Governance within Community Lifelines

## Resource Assessment, Development and Management

### Hydrological Training Programme

SOPAC in collaboration with UNESCO and WMO developed and organised a three-year course under the Hydrological Training Programme (HTP) for hydrological technicians from the Pacific region with funding provided by NZAID. Set up as a precursor to the Pacific Hydrological Cycle Observing System (HYCOS) Project, the HTP has enabled Pacific hydrological technicians to be better skilled in assisting their NHS Directors in the implementation of the Pacific HYCOS project and other tasks under their remit.

### Pacific Hydrological Cycle Observing System

The EU Water Facility funded Pacific Hydrological Cycle Observing System (HYCOS) held its first Steering Committee Meeting in April 2007. Scoping missions have been completed in all of the fourteen participating member countries and has identified a common theme of seriously reduced national capacity for hydro-meteorological data collection with little new

data being collected or added to established databases. Draft implementation plans are being developed for each country and communication strategies have been developed including an active Project Steering Committee user group. A website is being established with the Pacific Global Climate Observing System, (PI-GCOS) and the Pacific Global Ocean Observing System (PI-GOOS), which seeks to intergrate the regional initiatives for observing systems for water, climate and the ocean. Specific activities undertaken include amongs others the installation and commissioning of the Rewa River Flood Forecasting system in Fiji, deployment of loggers for rainfall measurement in the Cook Islands, the purchase of laptop computers for each of the fourteen countries and data rescue activities, for Papua New Guinea and Vanuatu.

## IWRM Capacity Development

SOPAC supported the development of a Post-graduate Diploma in Integrated Water Resources Management (IWRM) offered by the University of the South Pacific (USP) in Distance and Flexible Mode, as a pilot project on behalf of the United Nations University (UNU). The course started in early 2007 and will run on a part-time basis for approximately 18 months. It is coordinated through the UN Water Virtual Learning Centre (WWLC), newly established at USP. Links will be made between the Pacific node of the WWLC at USP and the implementation of the Pacific IWRM Demonstration programme funded by the GEF and the Pacific IWRM Planning programme funded by the EU Water Facility, both implemented through SOPAC.

## Water Quality Monitoring Capacity Building

SOPAC, the World Health Organization (WHO) and the Institute of Applied Sciences of the University of the South Pacific (IAS-USP) are implementing the NZAID-funded Water Quality Monitoring Capacity Building (WQM) Programme in four pilot countries (Cook Islands, Niue, Marshall Islands and Vanuatu). The objective of the WQM programme is to build sustainable national capacity for monitoring the quality of water (drinking, surface, ground and coastal). Regional training has been organised for all Pacific Island Country laboratory technicians and these were held in Fiji (hosted by USP-IAS) and Guam (hosted by Guam EPA and in collaboration with US EPA and WERI). The development of an electronic water quality database is currently in progress and will be trialled in the mentioned pilot countries initially, before regional dissemination.

## Participatory Training in Rainwater Harvesting

A Manual for Participatory Training in Rainwater Harvesting developed in 2004 as part of the SIDA funded United Nations Environment Programme (UNEP) project titled "Pilot Project on Empowering Women in Rainwater Harvesting in the Pacific Atoll Islands," has been translated into Tongan to allow wider use and easier access by communities involved in rainwater harvesting. SOPAC became a founding member of a rainwater harvesting partnership of UNEP and is liaising with IRCSA and UNEP to further promote rainwater harvesting as an option for domestic water supply in the Pacific Islands region.

## Hydrology for the Environment, Life and Policy (HELP)

SOPAC supported UNESCO's programme on Hydrology for the Environment, Life and Policy (HELP) to strengthen catchment area management practices in the Pacific. As a follow-up to the HELP Framework for Action, in the context of the Pacific Regional Action Plan on Sustainable Water Management, Fiji and Vanuatu were supported in establishing HELP basins in conjunction with the IWRM Demonstration programme.

# community lifelines programme

## Sustainable Sanitation

SOPAC supported the Kiribati Environment and Conservation Division within the Ministry of Environment, Lands and Agricultural Development (MELAD) to coordinate training with wastewater experts on sustainable sanitation. This included a review of common sewage treatment technologies and practices, and the design, construction and maintenance of composting toilets. The focus area for the training was the water reserve in Bonriki which is a sensitive area as it supplies water to households in densely populated South Tarawa.

## GEF funded Integrated Water Resources Management (IWRM) Project

The Global Environmental Facility (GEF), through UNDP, signed an agreement with SOPAC to develop an innovative programme on Sustainable Integrated Water Resources Management (IWRM) in the Pacific. The project is being developed by the countries through IWRM Focal Points supported by SOPAC and in collaboration with UNDP, UNEP and partners in the Pacific Partnership Initiative on Sustainable Water Management. The project will support the implementation of the Pacific Regional Action Plan on Sustainable Water Management that aims to improve the assessment and monitoring of water resources, reduce water pollution, improve access to technologies, strengthen institutional agreements, and leverage additional financial resources in supporting IWRM. A 2nd Steering Committee meeting for the project was held in Nadi, Fiji in April 2007, to review national IWRM diagnostic reports and demonstration concepts with a 3rd Steering Committee meeting held in Suva, Fiji in November 2007, to agree on the final demonstration designs and mechanisms for implementation. The sustainable IWRM in the Pacific will constitute part of the GEF Pacific Alliance for Sustainability (GEF-PAS) as one of the regional programmes to be considered by the GEF Council in April 2008.

## EU Water Facility Pacific SIDS IWRM Planning Programme

The EU Water Facility approved funding for the 3-year Pacific SIDS IWRM Planning programme which will provide substantial co-financing for the abovementioned GEF IWRM Demonstrations in a unique partnership of mutual aid and assistance. The programme will focus on the development of applicable and effective National Integrated Water Resources Management (IWRM) and Water Use Efficiency (WUE) plans as an important contribution to achieving relevant Millennium Development Goals of Pacific ACP States.

## EDF8/9 Reducing Vulnerability of Pacific ACP States

### KRA2 (Water and Sanitation)

The following activities were delivered under KRA2 (Water and Sanitation) of the EDF8/9 Project, with reports completed for all of the mentioned activities:

- Establishment of Laura Groundwater Lens Community Co-ordinating Committee and land use surveys completed and community awareness material produced and distributed in RMI.
- Rainwater harvesting asset condition surveys undertaken for Nauru and Tuvalu (Funafuti).
- Hydrological Monitoring Support Services in Palau.
- Groundwater Evaluation & Monitoring Assessment Tongatapu, Tonga.
- Hydrogeological support provided to EU-WaSSP, Samoa, with drilling rig and geophysical logging needs met.

## Biogas for Energy Production

The UNEP Global Programme for Protection of Marine Environment from Land-based sources of Pollution (GPA), Fiji Ministry of Agriculture and Department of Environment, and SOPAC are developing a demonstration and training facility for ecologically sound farming practices in close collaboration with Xiamen University (China). The goal of the project being to minimise nutrient release from pig waste through piloting technologies currently used in a Chinese “Model” Piggery. Linkages would be established within SOPAC’s Energy Sector as well as the Fiji Department of Energy to look into production and collection of biogas for energy production.

## Biofuel Energy Options

Biofuel energy options for the region have become more relevant as the trend for the price of crude oil continues upward. There has been a consequent increase of interest in evaluating the viability of alternative fuel options, especially locally-produced biofuels. SOPAC in its technical advisory capacity has continued 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. Various Pacific countries have taken up initiatives to develop remote islands’ capabilities to produce their own fuel, with various degrees of success. 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:

- Phase II of a feasibility study for the Samoan Electric Power Corporation (EPC) on the viability of using coconut oil on the island of Savai’i.
- Evaluation of the potential for a biofuel project on Koro Island in Fiji.
- The preparation of a technical publication “Liquid Biofuels in Pacific Island Countries” that brings together a range of Pacific experiences to date, identifies potential opportunities and considers the technical aspects of using biofuels.
- Utilising high resolution satellite imagery for assessing the potential coconut resource (for example, in Rotuma and Samoa).
- Monitored and participated in blending trials of biodiesel carried out by the Land Transport Authority (LTA) in Fiji.
- Commenced work on the development of a regional biofuels standard that will 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.
- Provision of technical assistance to the Fiji biofuels initiative.





## Promotion of Environmentally Sustainable Transportation in the Pacific Islands

A Medium-Sized Project (MSP) brief on the Promotion of Environmentally Sustainable Transportation in the Pacific Islands (PESTRAN) was developed and submitted to GEF-4 through UNDP. However, under the newly-introduced GEF – PAS, the Project Identification Form (PIF) for PESTRAN will require endorsement from the participating countries (Samoa, Fiji and Vanuatu) that it remains a priority for them.

## Wind Monitoring Installations

Four (4) wind monitoring towers, anemometers and data logger equipment were acquired through a SOPAC (PIEPSAP) – UNDP and NZAID partnership. Two monitoring stations have been erected on Upolu (Samoa), with one awaiting full commissioning. Two, fully commissioned stations are operational on Rarotonga (Cook Islands) and Funafuti (Tuvalu). The wind monitoring installations will run for a minimum of two (2) years, providing data to assess the potential wind energy resource available for development.

## Mangaia Wind Energy Project

The wind energy project in Mangaia (Cook Islands) which was part of the SPC implemented PREFACE project, was the focus of a full evaluation in early 2007 in order to present a detailed cost estimate for upgrading the system and in particular the connectivity to the existing diesel generator system. A proposal was prepared and submitted to France and Australia who provided funds for PREFACE to ensure connectivity to the grid. In the interim one of the wind turbines has failed and raises the very real question of the longer term sustainability of the current wind energy installation on Mangaia.

## Pacific Micro Energy Service Companies Project (PMESCP)

The implementation of the Pacific Micro Energy Service Companies project in Kiribati and the Solomon Islands has commenced with the gathering of baseline data and procurement of equipment. The Project is a collaborative initiative by the renewable energy and energy efficiency partnership (REEEP) and SOPAC.



## Stocktake of Energy Data and Information

Due to the general lack of sound energy data and information for planning and development in many countries a stock take of energy datasets, statistics and information available, both regionally and nationally, was completed. A key finding is that there are still significant gaps in both data and in the capacity to collect and manage this data. Regionally progress has been made with the further linking of petroleum data from the Pacific Islands Forum Secretariat to the main regional data sets and it is proposed that a similar approach will be taken with respect to utility data from the Pacific Power Association. Nationally the process of strengthening support in the area of energy data collection and management has commenced as a desk study initially by sending requests to country energy offices as part of the stock take process, which has received variable levels of response. It is important to note that in regard to national energy data and information there needs to be firm national commitment so that the data and information remains current and up to date.

## Applications Support in GIS and Remote Sensing

SOPAC continues to promote ICT applications using GIS and Remote Sensing tools . It played a major role in conducting a regional GIS&RS User's Conference in Fiji where GIS&RS users presented their applications and exchanged ideas. The Secretariat is now developing capabilities in ArcGIS to provide support specifically to the north Pacific member countries. In respect of GIS/RS and ICT Systems Management training, activities were conducted in – Papua New Guinea, Federated States of Micronesia (2), Fiji (3), Kiribati, Nauru, Niue (2), Solomon Islands, Tuvalu and Palau as part of SOPAC/EU Project. The purpose of the training courses was to support the establishment of new GIS & RS units and ICT centres of excellence, as well as enhance existing ones. Hardware and software are generally not the limiting factors as they are affordable. Rather, sustaining skills transfer and targeted capacity development continues to present the major challenge.

## Telecenters

SOPAC was delegated the authority to manage the Pacific Telecenter Online Community (PacTOC). This website is to be developed to provide online resources (business models, case studies, appropriate technologies) for telecenter operators, users, and rural/remote communities in the Pacific region. Funds have been secured to redevelop the site using a Free/Open Source Software (FOSS) Content Management System (CMS).

# community lifelines programme

## Asset Management

### Groundwater Resource Monitoring and Management Project Niue

UNESCO and SOPAC provided support for a Groundwater Resource Monitoring and Management project aimed at progressing the approval and implementation of Niue's Water Resources Regulation and enabling of the Water Resources Act 1996. Working closely with Niue counterparts a review is being undertaken of the current regulations to identify options for implementation. The introduction of these regulations, will allow Niue to outline approved water use and limits, and enforce wastage prevention. These coupled with the other initiatives, such as water demand management, will ensure more efficient and consistent supply of water to the consumer and better management of Niue's water resources.

### Pacific Water Demand Management Programme

Five pilot countries (Niue, Cook Islands, Solomon Islands, Marshall Islands and FSM) have received support in respect of the Pacific Water Demand Management Programme. The initiative is being implemented by SOPAC and the Pacific Water Association (PWA) and is funded by NZAID. 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 (WBWC) sub-regional workshops were held in Rarotonga, Cook Islands and Pohnpei, FSM and in-country support was provided to establish System Loss Management Plans in each of the mentioned pilot countries. The programme will assist 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 will include training, community education materials and technical expertise.

### The Pacific Water Safety Plans (WSP) Programme

The WSP Programme focuses on promoting a risk management approach for the provision of safe water supply in Pacific Island countries, with the first phase piloting Water Safety Plans in four countries (Tonga, Vanuatu, Cook Islands and Palau) completed. The WSP is funded under AusAID's Water Quality Initiative and is being jointly implemented by SOPAC and WHO with support from the New Zealand Ministry of Health, through its Pacific Island Countries assistance programme. Training was provided on Water Safety Planning and Water Safety Plans developed for urban and rural water supply schemes as well as associated improvement schedules. Public awareness programmes were conducted by in-country NGOs. Replication of Water Safety Planning is now underway in Fiji, Solomon Islands and Samoa and a follow-up phase is being considered by AusAID to allow for further replication in other PICs to support the actual implementation of Water Safety Plans in the pilot countries of Tonga, Vanuatu, Cook Islands and Palau.

### Wastewater Management Training

SOPAC has worked with UNEP/GPA, UNESCO-IHE and SPREP to deliver a training course for wastewater management. The first series of training courses were convened in Suva (Fiji), Guam and Port Moresby (PNG) over the work plan period 2005/2006 and will now be followed up with additional training actions for Tuvalu, Kiribati and Tonga, with further replication intended for PNG and Fiji.

### The Pacific Island Climate Update (ICU)

The NZ-funded ICU Programme is being implemented by SOPAC in collaboration with SPREP and NIWA. The ICU continues into its 7th year as a multi-national and multi-organisational climate bulletin with the primary goal of assisting Pacific Island Countries (PICs) in making informed planning and management decisions relating to their climate-sensitive sectors through the provision of timely and accurate seasonal climate forecasts. Published monthly by NIWA, 800 hardcopies of the climate bulletin are distributed to users around the Pacific Islands region while average monthly online access over the past 12 months sits at about 42,000 hits. Continued support is being sought from NZAID for the production of the ICU from 2008 to 2010.

### The Pacific Resource Centre on Water and Climate

The activities and function of the Pacific Resource Centre on Water and Climate, which was originally established using ADB funds, will be sustained for the period 2006 to 2009 through integration into the activities and outputs of the Pacific HYCOS initiative. The overarching purpose of the centre being to “establish a platform through which policymakers and water resource managers have better access to and make better use of information generated by climatologists and meteorologists”.

### Historical Climate Data in PICs

The joint SOPAC-SPREP-NIWA initiative to rescue, preserve and digitise historic climate observations from PICs has progressed with completion of an assessment of the data available and a listing of daily climatological and rainfall records that are archived in NIWA's climate database and sites for which daily data are still to be archived being provided. The climate database has in its archive 716 Pacific Island sites; of these 524 locations make daily observations of weather and climate. The programme, subject to the availability of funding is tentatively scheduled to be implemented over a three (3) year period.

### Geospatial Content Management Server (GeoCMS)

The deployment of the Geospatial Content Management Server (GeoCMS) and its Map Server activities, under the EDF8/9 Reducing Vulnerability Project, have continued with installation of servers in the Cook Islands, Federated States of Micronesia, Niue, and Palau.

### Technical assistance to PICs and Suva-based Missions on ICT-related Issues

Support actions such as ISP strengthening; LAN/WAN deployment; equipment selection, and deployment) have been provided. More specifically the provision of technical assistance and support to utilities in GIS and Remote Sensing such as a tailored GIS for asset management for the Solomon Islands Electricity Authority (SIEA) was delivered. The methodology, source code and the customisation of the GIS in MapBasic is available on the Solomon Government Map Server for download and replication by other Power Utilities and has already been capitalised on by the Fiji Electricity Authority (FEA)). SOPAC acquired high-resolution satellite imagery for the following countries, Federated State of Micronesia, Kiribati, Papua New Guinea, Fiji, Solomon Islands and Samoa.

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## Advocacy and Governance within Community Lifelines

### 1st Asia-Pacific Water Summit

One of the main outcomes of the 4th World Water Forum in (March 2006) included the creation of the "Asia-Pacific Water Forum" (APWF), a new platform to gain political support for water management in the Asia-Pacific region. The 1st Asia-Pacific Water Summit will be held on 3-4 December 2007 in Oita Prefecture, Japan. The Summit will be organized as a keystone activity of the Asia-Pacific Water Forum (APWF). SOPAC will be the main focal point for the Oceania component of the Asia-Pacific Water Forum and will provide support to countries participating in the summit and will moderate a Panel Session – Small Islands Dialogue on Water and Climate.

### Pacific Programme for Water Governance (PfWG)

The EU funded Pacific Programme for Water Governance (PfWG) enabled SOPAC to provide support for in-country consultations held in three pilot countries (Fiji, Solomon Islands and Kiribati). The PfWG supported the establishment and strengthening of National Water Committees and the development of a strategy in each pilot country to address institutional arrangements for water resources management. It is anticipated that the IWRM planning programme under the EU Water Facility would support replication of PfWG lessons learned and provide further support in development of institutional arrangements for water resources management for all fourteen Pacific ACP states.

### Pacific Partnership Initiative on Sustainable Water Management Coordination Unit

SOPAC continued as the Facilitator of the Partnership to fulfill its core functions and responsibilities. The Coordination Unit enabled the: Production of quarterly newsletters covering items on Pacific News; Publications; Multimedia; Websites; and the Water Agenda; Development of the Pacific Water action Matrix; Development and maintenance of a partners contact list and database. 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 (2006-2012).

### World Water Day

World Water Day 2007 was dedicated to better managing water resources. SOPAC and Live and Learn Environmental Education organised another Pacific World Water Day campaign on 22 March 2007. With the slogan "Our Islands with Water", the Pacific's pledge fitted well with the World Water Day theme "Coping with Water Scarcity". Awareness materials comprising student activity booklets and stickers were prepared and disseminated throughout the Pacific region to encourage the observance of World Water Day. Financial support was provided by regional funds from Taiwan ROC.

## CROP and Other Regional Working Group Mechanisms

SOPAC participated actively in the CROP Energy, ICT and the Sustainable Development Working Groups. Of particular interest are the links being developed through the SD-WG in regard to energy and climate and the work towards the re-establishment of the Climate Change Round Table as well as the updating of the climate change database. SOPAC continues its role as Chair for the Energy Working Group.

## Formal, Tertiary Capacity Development

SOPAC provided technical support to the USP ES301 Applied Geology course through provision of lectures, a field trip and setting and marking selected examination questions.

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

PIEPSAP continued to provide assistance, with the development of National Energy Policies and the review of national regulations and legislation. PIEPSAP has provided assistance to PICs in such areas as, capacity building in power utilities on the use of GIS and Remote Sensing, review of electricity tariffs, wind and hydro assessment, bio-fuel potential assessment, regional training on biogas plants construction and development. Specifications include support provided to Tonga in the drafting of a Renewable Energy Bill to promote the use of renewable energy.

## Commission on Sustainable Development (CSD)

For the CSD Sessions 14 and 15 in 2006 and 2007, the thematic cluster was “Energy for Sustainable Development, Industrial Development, Air Pollution / Atmosphere, and Climate Change”. SOPAC coordinated and contributed to the updating of the regional energy position paper to support the PIF New York Missions at the CSD15 Intergovernmental Preparatory Meeting. Unfortunately, due to the number of disagreements on text, particularly in the energy and climate change sectors, the CSD15 failed to result in a final and agreed negotiated text. SOPAC contributed to a SIDS Day Side Event and presented PEMM outcomes, regional energy issues related to sustainable development and through ENERGIA actively promoted and profiled the Pacific Energy Gender Network.



# community lifelines programme

## Pacific Energy Ministers Meeting and the Regional Energy Officials Meeting

SOPAC successfully convened a Regional Energy Officials Meeting (REM2007) and a Pacific Energy Ministers Meeting (PEMM2007) in Rarotonga, Cook Islands from 23 to 26 April 2007. The key outcome from the Pacific Energy Ministers Meeting, the first such meeting to be held in the region for 16 years, was a Declaration and Communiqué. The Communiqué forms the basis of an action and time bound matrix of activities for delivery, wherein relevant actions for SOPAC have been integrated into the CLP work programme.

## CROP ICT Working Group

SOPAC continued active participation in the CROP ICT WG where the primary focus has been to assist in the implementation of the Digital Strategy of the Pacific Plan, as outlined in the Wellington Declaration. SOPAC continued to play an active role in advocating ICT in the region through PICISOC (Pacific Chapter of the Internet Society), with the recent PICISOC ICT conference PacINET 2007 in Honiara, Solomon Islands being a recent example. In addition SOPAC has taken a lead role in the conduct of eReadiness assessments undertaking assessments in six PICs (Palau, Federated States of Micronesia, Tonga, Cook Islands, Niue, Tuvalu) with a further four (Nauru, Marshall Islands, Kiribati, Fiji) to be completed by the end of 2007. Technical advisory toward development of the Federated States of Micronesia ICT Policy as well as technical advisory in respect of policy development to other member countries has also been provided.

## Internet Society

SOPAC continues its support of Pacific Islands engagement in the debate and development of the Internet through supporting the ICT Specialist in his role of Internet Society Trustee and vice chairman of the Pacific Islands Chapter of the Internet Society. The Internet Society is an organisation that has chapters in more than 120 countries, with high profile members who help to shape the Internet of the future. It is important that the Pacific Islands are recognised for their uniqueness at the global level, if the Pacific Islands is to fully engage in the Internet Age and accrue the potential economic development opportunities that such engagement could bring.



## Pacific Islands node of the International Open Source Network (IOSN-PIC)

SOPAC, with funding from IOSN, conducted a FOSS workshop for policy makers in Tuvalu, Tonga and the Cook Islands. The workshops were part of the eReadiness missions to these PICs. Furthermore, SOPAC has initiated a number of small projects to promote FOSS including joint efforts with IOSN in installing a FOSS library system KOHA at the Secretariat with the vision of transferring this to member PICs in the future.

## Backup Power System, Generator and Uninterruptible Power Supply (UPS)

SOPAC is in the process of finalising the implementation and commissioning of a full backup power system, generator and uninterruptible power supply (UPS), for the Secretariat. Their installation will resolve a long standing concern in respect of business interruption to Secretariat functions and operations in the event of power outages and result in increased overall security of data and information and internet communications.

## Signed MoUs

SOPAC has signed memorandums of understanding with the Renewable Energy and Energy Efficiency Partnership (REEEP) South East Asia and the Pacific and the Pacific Islands Telecommunication Association (PITA). Both MoUs establish partnerships that would contribute towards strengthening collaboration on a local and regional level to complement work being undertaken by the respective organisations.

## The Pacific Energy and Gender Network (PEG)

The PEG continued its activities as outlined in the PEGSAP 2006-2008. Support from the Technical Centre for Agriculture and Rural Cooperation (CTA) helped in the convening of three sub-regional workshops on gender mainstreaming held in Fiji, Federated States of Micronesia, and Kiribati, as well as the printing of the 2007 REM and PEMM proceedings. Support from ENERGIA also enabled PEG to participate in CSD15. The 1st issue of PEG newsletter was published and printed in September, funded through CTA. The Asia-Pacific Regional Energy Programme for Poverty Reduction (REP-PoR) through UNDP also provided financial assistance towards a media advocacy project that lead to the mobilisation of additional resources from SOPAC and SPC. This is being implemented in the Solomon Islands, 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.

## Demand-side Management

An Energy Auditing Training Workshop was conducted in Chuuk with its EPA Office, which successfully audited the Chuuk State Hospital and the EPA Office. SOPAC as Chair of the Fiji Standards and Appliance Labeling Committee also assisted in progressing the adoption of the Trade Standards (Household Electric Refrigerating Appliances) Order 2007 in September.

## NEW INITIATIVES AND EMERGING ISSUES

### Pacific Plan

As a key partner organisation toward implementation of key initiatives under the Kalibobo Roadmap of the Pacific Plan, SOPAC remains mindful of its role and responsibilities to support those various initiatives that fall within its ambit and areas of comparative technical advantage. The Community Lifelines Programme has had the opportunity to report twice in 2007 to the Pacific Plan Action Committee (PPAC) against the Pacific Plan on progress within the three sectors of ICT (supports the implementation of initiatives identified within the Digital Strategy); Energy and the newly included initiative for Water and Sanitation. PPAC has considered the achievements with respect to these and accepts the positive progress that has been made.

### Water & Sanitation Sector

In accordance with the "International Decade for Action, Water for Life", 2005-2015 the focus for 2007 was 'Coping with Water Scarcity'. The theme provided the opportunity to highlight the significance of cooperation and the importance of embracing an integrated approach to water resource management at both international and local levels. This theme parallels the current development of the "Integrated Water Resources Management" (IWRM) programme within SOPAC wherein IWRM is advocated as a process that can assist and support countries in their endeavour to deal with water issues in a cost-effective and sustainable way.

The IWRM approach contributes to achieving MDG 7 which is to ensure environmental sustainability. One of its targets refers to safe drinking water and basic sanitation and specifically calls to "halve, by 2015, the proportion of people without sustainable access to safe drinking-water and basic sanitation."

Within the context of the decade of water the focal area for 2008 is the "International Year of Sanitation" (IYS) where 8 key sanitation issues have been flagged, these include hygiene promotion, sanitary facilities, water quality, wastewater treatment, sewerage systems, emergency sanitation, policy and institutional framework, and national information on sanitation. It is proposed that a component of SOPAC's Water and Sanitation activities for 2008 will focus around these issues and efforts to advocate and raise awareness in respect of the International Year of Sanitation will be profiled and highlighted.



## Pacific Energy Ministers Meeting 2007 and related Regional Energy (Officials) Meeting

In responding to the Pacific Leaders directive from 2006 SOPAC convened a Regional Energy Officials' Meeting (REM2007) and a Pacific Energy Ministers' Meeting (PEMM2007) in Rarotonga, Cook Islands, 23-26 April 2007. The Energy Ministers in addressing the issues raised by the Leaders regarding the bulk purchase of petroleum and increased use of renewable energy also reviewed the serious energy challenges in the region and took stock of national issues. In developing their Communiqué, the Pacific Energy Ministers recognised and emphasised that energy security is imperative for both economic growth and human development.

The Communiqué included a number of key actions with specific time-bound activities that have implications for both countries as well as regional agencies in regard to their implementation. The CROP-Energy Working Group has prepared an implementation matrix based on the Communiqué where it is anticipated that the relevant agencies and organisations will incorporate these into their respective work programmes.

Ministers recommended to Leaders that:

- the Pacific regional energy agenda issues should be mainstreamed with and incorporated into, the economic planning and reform agenda of the Forum Economic Ministers (FEMM) from 2008 onwards.
- a further meeting would be valuable and proposed to convene this in 2009 in conjunction with the next Energy Officials' Meeting.

It should be noted however that the implementation of the PEMM2007 matrix of activities that are assigned to the Secretariat along with its existing energy sector activities and commitments will necessitate additional financial and human resources if the times lines set by the Energy Ministers are to be met. Further, the Secretariat as the Chair of the CROP-EWG also has the responsibility to ensure the delivery of the activities in the matrix regarding reporting and therefore a "shepherding" role to manage and monitor the implementation of these activities is required.

In providing an update on the implementation of the PEMM2007 Communiqué to the PPAC meeting of September 2007 in Tonga, the following decisions were made by PPAC. It recognised that energy is a key driver for economic growth and acknowledged the need for continued high level support in regard to addressing regional energy sector initiatives and that equitable access to reliable and affordable energy is a fundamental requirement to achieve national development goals. Further, it recommended that Leaders commit their Governments to implementing the Pacific Energy Ministers' Communiqué noting in particular:

- Energy and economic development need to be integrated and prioritised in national and regional strategic development plans.
- The importance of Pacific Islands to have robust national energy policies and strategic work plans to ensure energy initiatives are progressed in line with national expectations.
- The importance of implementing appropriate policies and programs to promote an optimal energy mix, energy efficiency in support and consumption and sustainable renewable energy.
- A further Ministerial meeting would be valuable and propose that SOPAC convene this in 2009 with the next Energy Officials Meeting.

PPAC encouraged implementing agencies to reprioritise their existing resources and identify additional funds as necessary to progress initiatives identified.

# community lifelines programme

## Pacific Islands Energy Policy and Strategic Action Planning Project

The mid-term review of August 2006 for the Pacific Islands Energy Policy and Strategic Action Planning (PIEPSAP) Project highlighted and commended the significant contributions to PICs with respect to the development of their national energy policies and strategic action plans. In recognition of PIEPSAP's contribution to the energy sector in PICs, the review also recommended a further one year extension to August 2008, within existing resources. The extension allows PIEPSAP to build on its work on energy policy and strategic action plans; and during this period place emphasis on more practical interventions such as building the capacity and capability of power utilities in the area of GIS systems, developing appropriate and transparent mechanisms for electricity tariffs setting, wind energy resource assessment, hydro-electricity development and assessing the potential for biofuel development in PICs.

## Regional Biofuel Activities

The trend of increasing petroleum prices has continued to contribute to the growing interest in the region in the viability of using biofuels, particularly coconut oil, in power generation. In 2007, the Secretariat prepared a technical publication "Liquid Biofuels in Pacific Island Countries" that brings together a range of Pacific experiences, identifies potential opportunities and considers the technical aspects of using biofuels. As the technical aspects and national experiences are now relatively well documented there has been additional effort put into the assessment of the coconut resource for which high-resolution satellite imagery has been utilised. In Samoa the second phase of a project on Savai'i is currently being implemented where it focuses on assessing the resource and also potential demand and current use of copra/coconuts. The Secretariat has also worked with the Land Transport Authority (LTA) in Fiji on blending trials of biodiesel within their fleet.

In line with the recommendations of the PEMM2007 it is proposed that activities with respect to biofuels focus on the development of standards so that this will provide a quality baseline for production and increased confidence in engine manufacturers so that engines can be designed to burn these fuel blends.

## SOPAC Data and Information Security

The Issue of data and information security within SOPAC has been an issue of concern for the Secretariat. Internally SOPAC has actively progressed with the backing up of all relevant data and information with off-site storage. However this still has a level of vulnerability as the data and information backup is still held within Fiji. It is therefore proposed that consideration be given to the establishment of a remote backup site for SOPAC data and information.

Establishment of a remote backup site will allow SOPAC to backup data over the Internet to a storage system outside of Fiji providing extra protection against data loss as a result of viruses, natural disaster or unforeseen events. Such a remote backup would be automated where data can be encrypted for extra security and compressed (online backup) for better bandwidth performance.

Other benefits of establishing a remote backup site will, aside from facilitating the retrieval of any data loss in a timely manner, also allow the Secretariat to be evacuated immediately in case of an emergency with minimal concern for the data repository and reduced danger to human life. Further this will provide protection against large-scale disasters such as loss of primary data storage site and also act as a secondary data storage site.

As no one organisation is immune to extreme events that may result in total loss of and, or access to premises and data and information stored within (example the recent and very tragic loss of the DGMWR in Vanuatu due to a fire) such repositories may act as backup for national datasets over the long term.

## Digital Strategy and the Wellington Declaration of ICT Ministers

SOPAC continues to support the implementation of the Digital Strategy by actively participating in the CROP ICT Working Group and the Communication Ministers' Task Force (TF). During 2007 a MoU was signed between SOPAC and Pacific Islands Telecommunication Association (PITA). In regard to supporting the implementation of the Digital Strategy, which is led by SPC, SOPAC has worked actively in three of the key areas identified by the ICT Ministers Wellington of eReadiness Assessment, ICT Policies and eGovernment.

## GIS and Remote Sensing

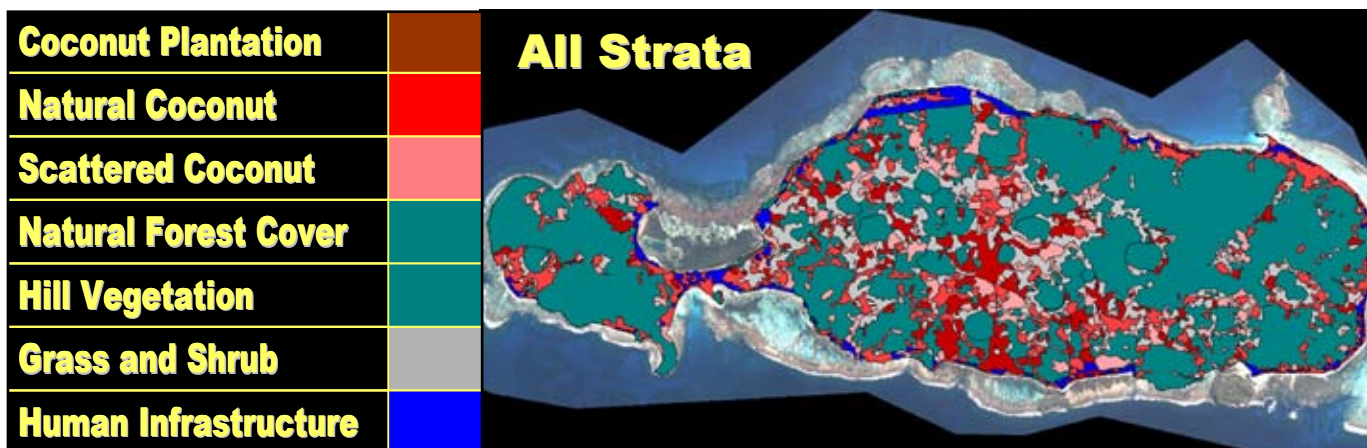
SOPAC has been actively engaged in assisting member countries in the development of GIS applications in relation to mapping. GIS applications are of particular benefit in the management of spatial datasets and the process has been enhanced by the availability of new and readily available satellite imagery, at reasonable cost. Such imagery has been used in the management of utility assets, catchments, mapping of hazards as well as spatial and temporal change of coasts and shorelines. As an example, changes of whole coastlines can be mapped through the use of high-resolution imagery, where in the past numerous beach profiles needed to be undertaken at selected times and locations over a number of seasons or years.

The ability to use GIS applications in the management of assets over a broad area has not been lost on utilities that have quickly grasped and embraced its usefulness. In the immediate and long-term provision of training the practical application support to member countries will become a key outreach function for the GIS and Remote Sensing services provided by the Community Lifelines Programme and indeed other programmes.

One issue in regard to GIS is the availability of multiple software platforms. SOPAC has recently had to commence development of internal capacity in the use of ArcGIS in order to facilitate the delivery of programme inputs in States located in the West Central Pacific such as Federated States of Micronesia, Marshall Islands and Palau who predominantly utilise ArcGIS, nationally.



# community lifelines programme



SOPAC ICT policies in general have supported the use of single standardised software per country, as this is deemed to be a cost-effective solution (there are of course exceptions in specific technical areas). For most countries within the region this has been MapInfo for GIS applications. However, for the past several years USP has promoted and only offered ArcGIS to its students who upon return to their countries have had to work with MapInfo. As a result of this there has been growing influence on decision makers to move to ArcGIS which has had significant implications, both technically as well as financially (including the cost of maintaining dual systems). Educational programmes in the region should ideally offer training in both MapInfo and ArcGIS. It is understood that some 80% of GIS applications in the region are based on MapInfo.

## Review of SOPAC and ICT

An internal review of SOPAC's information communication technology (ICT) sector has been undertaken with particular emphasis on evaluating support provided through the Community Lifelines Programme (outreach) and Corporate Services (internal support to the Secretariat).

It is envisaged that the proposed structure will have a dual focus: firstly, strengthening outreach activities that focuses SOPAC's comparative technical advantage on strengthening technical capacity in manipulating spatial data and information to provide and resource sustainable development solutions; and secondly ensuring a robust internal service support environment for effective delivery of the SOPAC Work Programme. It is anticipated that the new structure will be established in 2008.





# Community Risk Programme

## SUMMARY OF KEY HIGHLIGHTS

The major achievements and key highlights of the Community Risk Programme, (CRP) for 2006/2007 were developed under the following three components:

- Strengthening Resilience to Disaster
- Mitigating the Effects of Hazards
- Mainstreaming Disaster Risk Management

### Development of Disaster Risk Management National Action Plans

A major focus over the course of 2007 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 were developed for Vanuatu and the Marshall Islands over the 2006/2007 work plan period. The NAP development process involved a series of intensive engagements between members of the Partnership Network and officials at different levels within the administrations of Vanuatu and RMI. The process covered the following:

- High Level Advocacy Team Visit – The first step of the NAP process and intended to improve understanding and obtain high level political support and ownership of the need for disaster risk management mainstreaming, and for the NAP as a mechanism to facilitate such mainstreaming.

# community risk programme

- Situation Analysis – This involved the development of a country profile in terms of the current status of any disaster risk management initiatives, and the identification of gaps that could be addressed through a NAP.
- Reference Group Briefings – A NAP Reference Group (or Steering Committee for the NAP) was appointed to provide overall guidance for NAP development. These were largely comprised of Secretaries/CEOs. Briefings were made to this group to facilitate proper stewardship of the NAP development work.
- Task Force Workshops – Workshops were conducted with officials specially appointed to provide the required counterpart support. The NAP Task Force was responsible for identifying issues/challenges related to DRM that needed to be addressed, and the strategies to deal with these. NAP strategies have been reflected in a log frame supported by appropriate text which has been developed jointly by the NAP Task Force and members of the Partnership Network. In order to develop the NAP the Task Force used several source references (the Regional Framework, other regional/international instruments, and the findings of the Situation Analysis) as the basis from which to draw out the necessary strategies.
- Stakeholder Workshops – These were conducted to obtain additional perspectives from community leaders, non government organisations and the private sector on the major challenges related to disaster risk management.

The Partnership Network has agreed to support NAP development and implementation in the following countries in 2008: Cook Islands, Papua New Guinea, Samoa and the Solomon Islands. Other Pacific countries have informally sought support for NAPs and CRP, working with members of the Partnership Network, will schedule these over 2008/2009.

A major challenge facing NAP exercises is the organisation of support for implementation of various strategies and priority actions that are embodied within the NAPs. Some members of the Partnership Network have agreed to help address implementation viz the European Union and Australia. Support for implementation of NAPs in some Pacific countries will also be possible through Track 2 funding under the new World Bank Global Facility for Disaster Reduction and Recovery, which is being coordinated by the World Bank.

## Implementation of EDF 8/9 Project: Reducing Vulnerability of Pacific ACP States

In addition to the work undertaken on NAP development, 2007 has also seen a major effort toward addressing the remaining deliverables under the EU EDF 8 / 9 Project - Reducing Vulnerability of Pacific ACP States. The projects identified for implementation through the CRP in 2007 were:

- Capacity building in flood risk management in Samoa – EDF 8
- Establishment of the Navua Flood Early Warning System, Fiji – EDF 8
- Provincial Disaster Plan for Sandaun Province in PNG – EDF 8
- Coastal risk policy for Alofi Terrace in Niue – EDF 9
- Assessment of landslide risks in Palau – EDF 9
- Develop submarine geohazard maps of Niue, Nauru, Tonga, Kiribati, Tuvalu, Fiji – EDF 8/9
- Capacity building in geodata management for Disaster Risk Reduction and Disaster Management – EDF 8/9

## Partnership Network Meeting 2007

The Partnership Network was established in response to a call by Pacific Leaders to implement the Pacific Disaster Risk Reduction and Disaster Management Framework for Action 2005 – 2015: Building the Resilience of Nations and Communities to Disasters (Regional Framework), as one of their priorities under the Pacific Plan's Kalibobo Roadmap for priorities requiring immediate attention and implementation. The Partnership now has formal reporting requirements to Pacific Leaders on the progress of implementation of the relevant DRM strategies, under the Pacific Plan and these are facilitated by SOPAC through the CRP.

SOPAC coordinated the 2007 meeting of the Partnership Network in Suva in April. A number of initiatives were identified to help strengthen and consolidate its position as a key mechanism to specifically support NAP development and implementation and to provide general overall support for improved disaster risk management in the Pacific through assistance for the implementation of the Regional Framework.

A Partnership Capability Matrix has been compiled which identifies the areas of interest of members of the Network in relation to the implementation of the Thematic Areas of the Regional Framework. The matrix also identifies the geographical and other general areas of interest of each member.

## 13th Regional Disaster Managers Meeting

The 13th Regional Disaster Managers Meeting was held in Majuro, Marshall Islands from 27 to 29 June. Of significance is a request by National Disaster Management Offices (NDMO) for SOPAC to re-examine its post-disaster engagement role. In addition to this recommendation, SOPAC has also been requested to organise an Inter-NDMO support facility to facilitate direct participation of NDMOs in support of their colleagues following extreme events.

A further outcome of the 13th Regional Disaster Managers Meeting is the compilation of 2008 priorities by each of the NDMOs. At the meeting the NDMO heads were given insight into the CRP Work Programme and invited to forward their priorities for consideration in the proposed Work Plan for 2008. A key outcome of the meeting recommends the need for Annual Regional Disaster Management Meetings.

## Pacific Disaster Net

Development work continues on the establishment of a web-based disaster risk management database (Pacific Disaster Net). The design of the Pacific Disaster Net has essentially been completed with emphasis now turning to populating it with relevant data and information. Additional work is also on-going with regard to the graphic design of the website. A complementary mechanism in support of the Pacific Disaster Net is a Web Search Tool which is being developed to allow CRP to be directly informed of any emerging initiatives such as training courses, meetings and conferences/workshops and publications that may be made available through a range of other websites. Information gathered through the search engine will be channelled to NDMOs and other partners to enhance knowledge and decision-making capacity in relation to disaster risk management.

# community risk programme

## Pacific Disaster Risk Management (Training) Programme (PDRMP)

SOPAC continued with its commitment to improve disaster risk management skills levels and expertise amongst Pacific Island disaster risk management professionals by maintaining its long standing relationship with The Asia Foundation/Office of US Foreign Disaster Assistance (TAF/OFDA) under the PDRMP. With the support of TAF/OFDA a number of courses were organised and delivered throughout the Pacific, for a broad range of participants. The total number of courses conducted in 2006/2007 are detailed below:

Course	# Delivered	Location of Course Delivery
Introduction to Disaster Management	5	Nauru, FSM, Solomon Islands, Cook Islands, Fiji (2)
Initial Damage Assessment	4	FSM, Samoa
Exercise Management	1	Regional (Samoa)
Risk Programme Management	1	Regional (Samoa)
Emergency Operation Centres	3	Cook Islands
Training for Instructors	3	Fiji
<b>Total</b>	<b>17</b>	

In addition to the conduct of the above courses the PDRMP has supported the following activities:

- Police Leadership Training in Samoa
- GIS Operational Exercise in Tonga
- Workshop and operational exercise for the Navua Flood Early Warning System in Fiji
- Operational exercise in the Cook Islands (with the support of Emergency Management Australia and SOPAC)



## Pacific Emergency Management Training Advisory Group (PEMTAG)

PEMTAG is an association of organisations in the Pacific that directly facilitate disaster risk management training and capacity building programmes. The members of PEMTAG are SOPAC, TAF/OFDA, United Nations Office for the Coordination of Humanitarian Affairs (UN-OCHA) and the International Confederation of Red Cross & Red Crescent Societies (IFRC). PEMTAG met twice in 2007.

In addition to the facilitation of training PEMTAG provides technical expertise for the conduct of operational exercises to test emergency management arrangements in PICs. They also provide scholarship support to Pacific Island disaster risk management professionals to assist them to obtain formal, professional qualifications in disaster management through the Post Graduate Certificate in Disaster Management programme under Swinburne University in Melbourne Australia. Three (3) individuals from Papua New Guinea, Fiji and the Solomon Islands were assisted in 2007.

## NEW INITIATIVES AND EMERGING ISSUES

### New Initiatives

#### Regional Early Warning Strategy

The Regional Early Warning Strategy was endorsed by NDMO Directors at the 13th Regional Disaster Managers Meeting. The strategy proposes a set of regional and national activities to enhance early warning capabilities in the Pacific in relation to a range of hazards – natural, human-induced, biological etc in keeping with the multi-hazard approach adopted within the Regional DRR & DM Framework.

It is intended that the strategy will be implemented directly through the partnership arrangements with relevant international and regional organisations and the recently established Pacific Disaster Risk Management Partnership Network and that the main activities identified will be incorporated into the National Action Plan (NAP) development process in each member country.



# community risk programme

In connection with the Regional Early Warning Strategy (and specifically in relation to the identification of specific initiatives to address tsunami early warning and response) the Working Group of the Pacific Tsunami Warning System (PTWS) – South West Pacific region, which intends to better acquaint SOPAC member countries and other interested partners with the mechanisms of support that may be possible through the PTWS and which would help to address tsunami early warning capacity building; and the development of a regional research strategy that would improve the understanding of seismic risks and in particular the recurrence of large magnitude earthquakes and associated tsunamis through reviewing the paleo-earthquake and tsunami history of active plates within the Pacific, convened meetings in the margins of the 36th Annual Session.

## EU EDF 9 B Envelope Multi Country Project

Following lengthy discussions between Pacific ACP States to consider mechanisms for the utilisation of remaining EDF B-Envelope funds in projects aimed at building or strengthening national actions to reduce vulnerability to natural disasters, eight Pacific states formally agreed in December 2006, to delegate authority to the RAO for the use of funds towards the development of a regional multi-country project. The 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 will be managed through a Project Management Unit (PMU) to be based within the CRP. It will receive close support and expertise from other relevant technical programme areas within SOPAC such as the Water Area under the Community Lifelines Programme. Over 2007, with support from EDF8/9 funds under the Reducing Vulnerabilities Project extensive in-country consultations have commenced with a view towards the development of detailed Country Implementation Plans. These have been completed to a final draft stage and will need to be further validated by PMU staff during the inception phase of the project in 2008.

## Annual Regional Disaster Managers Meeting

In view of the increasing range of challenges to member countries in relation to the implementation of the Regional Framework and more particularly the mainstreaming of disaster risk management at all levels within each country, it is proposed that the biennial regional meeting for disaster managers now become an annual event. This will allow for more regular exchange among member countries and regional and international partners. Efforts will be made to schedule these to coincide with annual meetings of the Regional Meteorological Directors given the commonality and convergence of issues discussed at both forums. If possible overlapping sessions will be organised to facilitate direct exchange between the two groups. SOPAC will need to engage with SPREP on the process of facilitating such joint meetings.

## ACP/EU Natural Disaster Facility

The ACP/EU Natural Disaster Facility is a global initiative supporting the six ACP sub-regions, one being the Pacific. The Facility is expected to become operational in 2008 and will allow SOPAC and partners to address DRM National Action Plan requirements for the 14 Pacific ACP States who are all SOPAC member countries. The facility will provide 1.86 million Euro over 4 years specifically to support the development and implementation of NAPs. Subject to the successful implementation of the initiative, additional funding may be provided by the EU, through the facility for risk reduction actions identified as priorities within NAP plans of Pacific ACP member States.

## Regional Meeting of DRM and Finance/Planning Secretaries

In order that disaster risk reduction has the requisite high-level profile to enable effective mainstreaming into national policies and the budget processes it is key that avenues be sought to jointly engage national DRM and Finance/Planning offices at the highest levels. One such mechanism could be joint meetings between Secretaries/CEOs of the responsible agencies. The objective of the meetings would be to create a better understanding among the target group of the relationship between disasters and development and to emphasise the need for a concentration of effort on disaster risk reduction in the national planning and budgeting processes and systems.

The Secretaries/CEOs of the target agencies are seen as critical components of the entire DRM mainstreaming scenario and as such it is important that some significant investment is made to co-opt their support. Through an investment such as the proposed meeting it is anticipated that the target group will be more amenable and indeed be more comfortable with the notion of leading the required DRM change management effort.

In the interests of extending the level of support for DRM mainstreaming it is envisaged that in future the issues and challenges discussed at chief executive level will also be further addressed at a regional Ministerial level perhaps through the annual Forum Economic Ministers Meeting (FEMM). At present there is no regional mechanism at Ministerial level that is reserved specifically for disaster risk management. FEMM is the most relevant mechanism, and particularly to demonstrate the links between disasters and development.





## Emerging Opportunities

### Melanesian Volcanological Network

SOPAC has supported stakeholder consultations on a proposal to develop a Melanesian Volcanological Network (MVN), a sub-regional initiative between Papua New Guinea, Solomon Islands and Vanuatu. The outcome of this consultation has been the development of a scoping document that articulates the proposed framework for the MVN.

The intention behind the MVN is to help reduce volcanic risk in Melanesia through provision of a cost effective and sustainable operational framework for the exchange and sharing of the Volcanological resources (information, observations, and experience) between Papua New Guinea, Solomon Islands and Vanuatu (on a sub-regional basis) to help reduce the vulnerability of affected communities. The concept although currently limited to volcanic risk can be adapted in the mentioned countries to cover other hazards, and can also be adapted to result in the establishment of other volcanic and, or an all hazards network for other sub-regional groupings in the Pacific Islands region.

### AusAID NAP Implementation Facility

The Australian Government through AusAID has expressed its intentions to SOPAC to develop a regional facility to support NAP implementation in member countries. In this regard SOPAC has through its CRP developed a concept paper for this facility and it is under consideration by AusAID.

If established the AusAID facility will contribute significantly to the implementation of disaster risk reduction and disaster management initiatives that will be identified through the NAP processes in the countries, as well as supporting NAP development in those countries that are working toward identifying their DRM priorities.

### World Bank Global Facility for Disaster Reduction and Recovery (WBGFDRR) – Track 2 Funding

The GFDRR has been established in 2007 to support, among other things, the implementation of the Hyogo Framework for Action at regional and national levels. SOPAC will support applications by eligible member countries for funding to develop and implement DRM National Action Plans.



Under guidelines issued by the WB Papua New Guinea and the Solomon Islands are eligible for assistance in 2008 and Fiji, Kiribati and the Marshall Islands in 2009.

In addition SOPAC is eligible to submit a multi-country proposal for follow up investments in disaster preparedness and mitigation with the support of the relevant national focal points – NDMOs. Consideration is being given to the development of such a proposal and will require the involvement and support of member countries to ensure that its is relevant, focussed and delivers results against their determined priorities for disaster risk reduction.

## SOPAC Post Disaster Engagement Policy

As an outcome of the 13th Regional Disaster Managers Meeting SOPAC has been requested to review its current post disaster engagement policy with a view to providing support to national authorities for the coordination of technical assessments that are conducted by various international research and academic institutions.

The need for such support has recently been highlighted in the case of the Solomon Islands post the 2007 earthquake and tsunami where it has become evident that PICs often lack the technical capacity to coordinate and manage external technical assessment programmes in immediate post-disaster mode where their immediate and key priority is response.

A draft concept document for such a policy is being developed and will undergo consultation with a number of stakeholders including NDMOs and other response agencies.

## Inter-NDMO Post Disaster Support Programme

Directors of the NDMO have requested CRP to consider the feasibility of a programme to facilitate direct, hands-on collegiate support among NDMOs during the response phase of extreme national disasters. As proposed by NDMO Directors, the programme will provide “recipient” countries with supplementation of skills to help address coordination issues in relation to disaster response. In addition, NDMO Directors perceive such a programme as an opportunity for the “donor NDMO” to sharpen skills (acquired through various training and capacity building programmes) through engagement in a real-time situation.

# community risk programme

## Pacific Disaster Risk Management Partnership Network

The Pacific Disaster Risk Management Partnership Network will continue to provide support for disaster risk management mainstreaming in PICs and SOPAC as the lead facilitator will need to ensure that it (Partnership Network) remains a viable prospect for this role. Since its establishment in February 2006 the Partnership Network has (through representative sub groups) assisted the development of National Action Plans for Vanuatu and the Republic of the Marshall Islands, as well as the design and development of the Pacific Disaster Net. These are significant achievements and it is hoped that with anticipated funding support through the ACP/EU Natural Disaster Facility and other sources, further gains will be achieved in 2008.

A major challenge facing the Partnership Network, and particularly SOPAC, in 2008 is in relation to ensuring the greater involvement of all partners in aspects of NAP development and implementation. Pacific countries will be anxious for support to implement NAPs once these have been developed and it is crucial to the success of disaster risk management mainstreaming efforts that partners are able to adjust their existing support mechanisms as well as to create new mechanisms for this purpose. Partners must seriously consider greater collaborative measures amongst themselves to be able to bring to bear their respective resource pools to make a significant impact in terms of NAP implementation.

In connection with this it is pertinent to note that NAP development and implementation is likely to be affected by recent efforts to encourage a greater harmony between the implementation of the Pacific Islands Framework for Action on Climate Change and the Regional DRM Framework. In these circumstances the Partnership Network's support to PICs may need to be re-adjusted to ensure that it remains a strong relevant and responsive mechanism.

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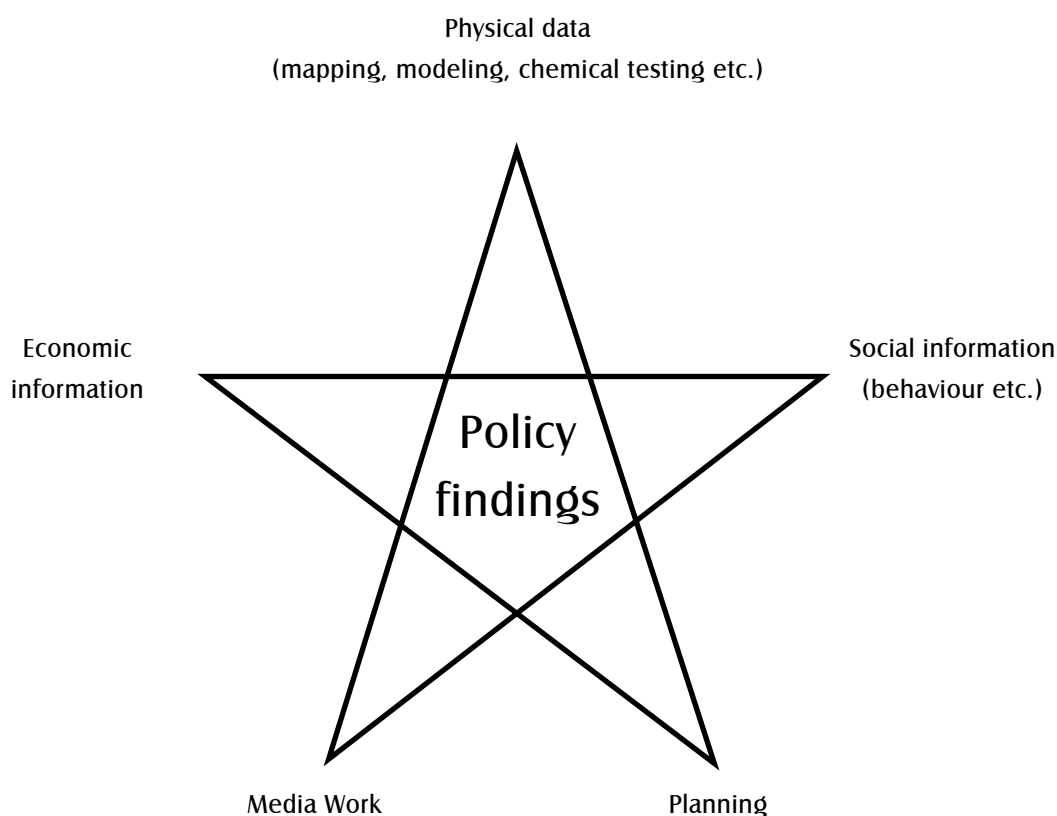


# Economics and sustainable development of natural resources at SOPAC

SOPAC incorporates information from a variety of disciplines to support Pacific island countries to sustainably develop their natural resources. Information is incorporated from: the physical sciences (maps, mathematical prediction models, chemical tests etc.); social sciences (household surveys, stakeholder consultations etc.); national planning (legislation, codes of conduct, etc.); communications (media and awareness work); and economic analysis.

This combination of information supports fully rounded assessment of natural resource issues. Economic analysis is becoming increasingly fundamental. Supported by strategic communications, economic analysis builds upon critical scientific and social data to develop sustainable resource use policies and, ultimately, to achieve real change.

The most popular economic analysis conducted through SOPAC is cost benefit analysis and or financial assessment. These types of analyses can help Pacific island countries determine the long term feasibility of projects or policies. As an example, cost benefit analysis and financial assessment were used to assess the feasibility of dredging the lagoon in Tarawa, Kiribati, for 'aggregates'. Aggregates are sand, gravel and or small rocks used for construction. They are in high demand around South Tarawa, for construction purposes, road maintenance and ground cover. Conventionally, aggregates have been accessed by excavating sand and gravel from the beaches and coastal flats around Tarawa. However, while this 'coastal mining' is cheap and effective, there is only a limited amount of aggregate available and removing too much





increases coastal erosion. Consequently, South Tarawa is at increasing risk of flooding and saltwater intrusion to ground water. The problem is becoming increasingly urgent in the face of rising sea levels from climate change. In a time when South Tarawa residents most need sand to build seawalls to protect them from the sea, removing the sand from their beaches to build the walls can ironically actually put them at greater risk of flooding.

The Kiribati government has consequently considered whether it should attempt to minimise flooding by accessing aggregates from the Tarawa lagoon instead of from the coast. Scientific assessment and mapping already confirms the existence of substantial supplies of aggregate in the lagoon. Scientific testing also confirms the suitability of this aggregate for basic construction work. The government is consequently interested in establishing a company to dredge the lagoon aggregates to minimise the threat of flooding. However, to be certain whether dredging would ultimately pay for itself and benefit the country, an economic analysis was conducted. Drawing on a household survey conducted by SOPAC to assess the scale and nature of coastal mining by households, the resulting economic analysis indicated that:

- A commercial company established to dredge aggregates sustainably from the lagoon could operate feasibly, potentially generating a small annual profit of around A\$62 000 in a year when no major infrastructure projects are underway. Substantially higher profits could theoretically be generated in a year when major infrastructure projects are underway. At the same time, targeting lagoon reserves would help protect the coastal environment, reducing the chances of flooding in the future.

- Sustainable lagoon dredging could generate a minimum economic (social) return of around 16 per cent. This is a high rate of return and is all the more significant when it is considered that the study was not able to include values for all the environmental benefits of reduced mining around South Tarawa (benefits of protecting infrastructure and property, public utilities such as water and sewerage, electricity and phone lines, protecting agriculture and public health).

The economic analysis also identified some key factors that would affect the likelihood that these benefits would actually materialise. For example, it identified that a company would only be profitable enough to survive if competition on the aggregates market was limited but that this was unlikely given the scale of mining conducted by families for sale. Consequently, competition to undercut the price of lagoon-sourced aggregate could be stiff. The analysis also reveals that it was unlikely that the government could ever successfully ban harmful coastal mining, so it suggested ways to manage competition from families. Without this information, any attempts by the Government of Kiribati to establish a dredge company would most probably be destined for failure.

Together with some strategic communications and awareness work, the findings of the study have since been used by the Government of Kiribati to refine the design of an Environmental Sustainable Aggregates company to increase the chances of successfully – and sustainably – dredging aggregates from the lagoon. Economic analysis combined with scientific and social information is therefore helping Kiribati to meet its needs while minimising flooding. The EU has subsequently committed 2.2 million Euro to establish the company and assist in risk reduction. It is envisaged that Kiribati will commence work on the project in 2008.



## Appendix 1: SUMMARY OF 2007 DONOR FUNDING (By Programme)

ANTICIPATED SOURCE OF FUNDS	GRAND TOTAL	TOTAL OCEAN & ISLANDS	TOTAL COMMUNITY LIFELINES	TOTAL COMMUNITY RISK	TOTAL CORPORATE SERVICES	TOTAL DIRECTORATE
<b>A: DONOR FUNDING</b>						
European Union EDF 8	4,276,380	1,292,870	2,053,714	839,032	90,764	
Australia – Annual Grant	2,620,285	1,049,572	916,259	654,454	0	
New Zealand – Annual Grant	1,928,748	423,213	1,176,510	329,025	0	
EU – Water Facility	1,630,435	0	1,630,435	0	0	
European Union EDF 9	1,093,540	346,604	388,951	321,658	36,327	
Danish/EU (CTA)	922,838	0	922,838	0	0	
GEF – UNDP	555,556	0	555,556	0	0	
New Zealand-Special Grant	467,022	0	467,022	0	0	
BOM Australia	301,458	301,458	0	0	0	
Australia Volunteer International (AVI)	271,475	271,475	0	0	0	
ACP/EU National Disaster Funds	217,391	0	0	217,391	0	
Taiwan (ROC)	205,055	0	205,055	0	0	
UNDP	189,724	0	79,365	110,359	0	
United Kingdom (ODI)	116,100	116,100	0	0	0	
UNDP – REP PoR	103,175	0	103,175	0	0	
Fiji	95,000	95,000	0	0	0	
REEEP	88,000	0	88,000	0	0	
TAF/OFDA	79,478	0	0	79,478	0	
GEF Global Ocean Forum	71,429	71,429	0	0	0	
Australian Youth Ambassadors (AYA)	62,500	0	0	62,500	0	
Kiribati (Bilateral)	55,000	55,000	0	0	0	
Kiribati EU/NIP B Envelope EDF9 Trust Funds	50,000	50,000	0	0	0	
NOAA	47,619	47,619	0	0	0	
International Open Source Network - PIC	30,397	0	30,397	0	0	
PNG (IK)	25,000	25,000	0	0	0	
SPREP	23,760	0	23,760	0	0	
Pacific Chapter of Internet Society (PICISOC)	15,873	0	15,873	0	0	
UNESCO IOC	15,873	15,873	0	0	0	
AFAC	15,000	0	0	15,000	0	
Red Cross (IFRC)	10,000	0	0	10,000	0	
Foundation for Development Cooperation (FDC)	5,952	0	5,952	0	0	
<b>TOTAL DONOR FUNDING</b>	<b>15,590,063</b>	<b>4,161,213</b>	<b>8,662,862</b>	<b>2,638,897</b>	<b>127,091</b>	<b>0</b>
<b>B: TOTAL REGULAR BUDGET (principally membership contribution)</b>	<b>2,814,018</b>	<b>62,425</b>	<b>196,654</b>	<b>0</b>	<b>1,915,205</b>	<b>639,734</b>
<b>TOTAL 2007 REVISED BUDGET</b>	<b>18,404,081</b>	<b>4,223,638</b>	<b>8,859,516</b>	<b>2,638,897</b>	<b>2,042,296</b>	<b>639,734</b>
<b>TOTAL 2008 APPROVED BUDGET</b>	<b>30,126,987</b>	<b>9,193,053</b>	<b>9,341,649</b>	<b>8,456,920</b>	<b>2,134,975</b>	<b>1,000,389</b>

## Appendix 2: REPORTS & PUBLICATIONS UPDATE (as at 30 November 2007)

### CORPORATE PUBLICATIONS

Proceedings of the Thirty-fifth Session, hosted by the Government of the Solomon Islands in Honiara, Solomon Islands, 20-28th September 2006.

Annual Report Summary 2006.

### TECHNICAL REPORTS

- 389 Field survey procedure for using an Automatic/Spirit Level in beach profiling/Andrick Lal.
- 397 An economic assessment of renewable energy options for rural electrification in Pacific Islands Countries/Allison Woodruff.
- 399 Pacific Islands Regional Maritime Boundaries Information System (PIRMBIS) – Nauru Maritime Boundaries Project. CONFIDENTIAL
- 400 Energy, gender and national sustainable development strategies in Pacific Island Countries (PICs)/Rupeni Mario.
- 401 Honiara City Water Loss Management, Sectorisation, Metering and Logging Programme – Stage 1, Honiara, Solomon Islands, 29 July to 2 August 2007/Mathias Kleppen.
- 402 PIRMBIS Verification of the 1980 Treaty Line and Computation of the Median Line between Tokelau and American Samoa/Andrick Lal  
CONFIDENTIAL
- 403 Tonga water supply system description – Nuku'alofa/Lomaiviti Village (in conjunction with WHO and Tonga Water Board)/Davendra Nath, Mitesh Mudaliar & Saimone Helu
- 404 Niue Water Loss Management, Sectorisation, Metering and Logging Programme, 25 May to 7 June 2007/Mathias Kleppen.
- 405 Best practices guide for water laboratories (in conjunction with USP)/Mereoni Cavalevu, Tasleem Hasan & Bill Aalbersberg.
- 406 Southern Fiji Islands GPS Survey Campaign – Project Specification/Andrick Lal & others.

### PRELIMINARY REPORT

- 146 Preliminary results from multibeam and seismic surveys, Pohnpei State, Federated States of Micronesia. (32 pages)

### MISCELLANEOUS REPORTS

- 611 FAO/DIMITRA/CTA Workshop – Reflecting and Acting Together to Strengthen Rural Women's Networks and to fight HIV/AIDS in rural areas, 13 - 17 June 2005, Brussels, Belgium/Yogita Chandra-Bhikabhai
- 612 Regional Implementation Meeting for Asia and the Pacific for the Fourteenth Session of the Commission on Sustainable Development, 19-20 January 2006, Bangkok, Thailand/Yogita Chandra-Bhikabhai & Makereta Sauturaga
- 616 PEG Attendance at the UN Commission for Sustainable Development 14th Session, New York, 1-12 May 2006/Anare Matakiviti
- 617 Workshop Report: Sustainable Utilisation of Renewable Energy on Solar Photovoltaic Systems, 1-5 May 2006, Ha'apai, Kingdom of Tonga/Allison Woodruff, Jan Cloin & Rupeni Mario
- 618 Technical Training Sub-regional Workshop – Pacific Islands Regional Maritime Boundaries Project, 8-12 May 2006, Majuro, Marshall Islands – Summary Record/Emily Artack & Andrick Lal
- 620a South Pacific Applied Geoscience Commission (SOPAC) Annual Business Plan 2006. Report on Progress for Annual Business Plan 2006. RESTRICTED/Cristelle Pratt
- 620b SOPAC Integrated Corporate Risk Management Report 2006-2007. Prepared for the SOPAC Governing Council, August 2006. RESTRICTED/Cristelle Pratt
- 620c South Pacific Applied Geoscience Commission (SOPAC) Proposed Annual Business Plan 2007. RESTRICTED/Cristelle Pratt
- 622 Disaster Risk Management in the Pacific Database (DISPAC) – Record of Consultation Proceedings, 26 May 2006, Banyan Room, Holiday Inn, Suva (Fiji)/Litea Biukoto, Rebecca McNaught & Ruth Lane
- 623 Report on the Regional Demand Side Management Workshop – Designing Intelligent Energy Use Programmes, 31 July –
- 624 Pacific HYCOS – The Pacific Hydrological Cycle Observing System. (Pacific Resource Centre on Water and Climate)/Water Department
- 625 Sustainable Integrated Water Resources and Wastewater Management Project in Pacific Island Countries – Partnership and Inception Meeting, 21-26 September 2006, King Solomon Hotel, Honiara, Solomon Islands/Water Department
- 626 Exploring the Potential of Waste as a Renewable Source of Energy in the Pacific Islands/Rupeni Mario
- 627 Maritime Boundaries Negotiations Workshop – Summary Report. 3-7 October 2005, Hotel Kitano Tusitala, Apia, Samoa/Ocean & Islands Programme/Ocean & Islands Programme
- 628 Liquid Biofuels in Pacific Island Countries/Jan Cloin

- 629 Energy Saving Options in Homes. (Regional Earth Day in the Pacific 2007)/Koin Eteuati
- 630 Funding for Renewable Energy and Energy Efficiency Projects under the Kyoto Protocol's Clean Development Mechanism. (REEEP, FIELD & SOPAC)
- 631 Proceedings of the Second Pacific Disaster Risk Management Partnership Network Annual Meeting, 12-13 April 2007, Holiday Inn, Suva, Fiji Islands/Lala Bukarau & Litea Biukoto (Comps)
- 632 Incremental Costing and Co-funding – A Crude Guide (for designing project proposals to the GEF). (SOPAC Sustainable Integrated Water Resources and Wastewater Management Project for Pacific Islands Countries)/Paula Holland
- 633 Summary Report – Sustainable Integrated Water Resources and Wastewater Management Project in Pacific Island Countries (IWRM Project), 2nd Steering Committee Meeting, 23-27 April 2007, Sonaisali Island Resort, Nadi, Fiji Islands. CD Rom only/Water Department
- 634 Report on "International Conference on Biofuels", 5-6 July 2007 by the European Union in Brussels, Belgium/Jan Cloin
- 649 Proceedings of the 13th Regional Disaster Managers' Meeting, 26-29 June 2007, Majuro, Republic of the Marshall Islands/Litea Biukoto (Comp.)
- 650a Abstracts of Papers Presented at the STAR Session 2007. Pre-Session Version/John Collen & Lala Bukarau (Comps)
- 650b Abstracts of Papers Presented at the STAR Session 2007. Post-Session Version/John Collen & Lala Bukarau (Comps)
- 651 TONGA – Inventory of geospatial data available and options for tsunami inundation and risk modelling. (SOPAC/GA Tsunami Hazard & Risk Assessment Project – Report 1)/Helen Pearce (Comp.)
- 652 NIUE – Inventory of geospatial data available and options for tsunami inundation and risk modelling. (SOPAC/GA Tsunami Hazard & Risk Assessment Project – Report 2)/Helen Pearce (Comp.)
- 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. (CD-Rom only)/Energy Department
- 667a Pacific Islands Applied Geoscience Commission (SOPAC) Annual Business Plan 2007. Report on Progress for Annual Business Plan 2007. RESTRICTED/Cristelle Pratt
- 667b SOPAC Integrated Corporate Risk Management Report 2007-2008. Prepared for the SOPAC Governing Council, November 2007. RESTRICTED/Cristelle Pratt
- 667c Pacific Islands Applied Geoscience Commission (SOPAC) Proposed Annual Business Plan 2008. RESTRICTED/Cristelle Pratt

## TRAINING REPORTS

- 117 Training Assessment Report – Wastewater management training in the Northern Pacific Region – Guam and Papua New Guinea: Improving sanitation and wastewater management for Pacific Island Countries, June 5-10, 2006 at University of Guam & June 26-30, 2006 at University of Papua New Guinea/Kamal Khatri
- 118 Needs Assessment for the Wastewater Training Programme for the Pacific region/Kamal Khatri, Sarah Davies, Marc Overmars & Bill Aalbersberg
- 119 Training Assessment Report – Improving sanitation and wastewater management for Pacific Island Countries, 24-28 October 2005, Suva, Fiji Islands
- 120 Samoa Trainee Attachment Report, July 2006/Tile Tofaeono
- 121 Introduction to flood hydrology, river modelling and floodplain mapping training, 13 July – 3 August 2006/Litea Biukoto, Michael Bonte & Alena Lawedrau
- 122 Minimising nutrient release from animal waste in the Pacific SIDS through Ecological Pig Farming as practised in a Chinese model project – Training and Strategic Action Report/Kamal Khatri
- 123 Water Loss Management Training Course, Rarotonga, Cook Islands, 12-16 March 2007/Mathias Kleppen
- 124 Water quality laboratory training workshop report, 14-18 May 2007/Tasleem Hassan
- 125 Improving sanitation and wastewater management for Pacific Island Countries, 24-28 October 2005 – post-training evaluation/Kamal Khatri
- 126 NZAID/SOPAC/WMO/UNESCO/NIWA Hydrological Training Programme 2004-2006, Training CDs/Water Department
- 127 Water quality laboratory training course for the Northern Pacific island countries, 16-20 July 2007, Tasa Conference Room, Pacific Islands Club, Guam/Tasleem Hasan
- 128 Pacific WSP Programme – National Training and Planning Workshop, Kingdom of Tonga, 17-21 July 2007/Davendra Nath & Mitesh Mudaliar
- 129 Water demand management capacity building initiative for WDM Team Leader, Paul Maoate, Rarotonga, Cook Islands/Mathias Kleppen

## EU-SOPAC PROJECT REPORTS

- 051 Vanuatu Country Mission Report – Adviser for Sustainable Development Mission to Port Vila, Vanuatu, 28 June – 12 July 2005/Netatua Pelesikoti

- 052 Vanuatu Country Mission Report – Adviser – Sustainable Development & Adviser – Hazard Assessment Mission to Port Vila, Vanuatu, 24 November – 4 December 2005/Netatua Pelesikoti & Litea Biukoto
- 053 Kiribati Technical Report – Analysis of coastal change and erosion – Tebunginako Village, Abaiang, Kiribati. December 2005/Arthur Webb
- 054 Tuvalu Technical Report – Coastal change analysis using multi-temporal image comparisons – Funafuti Atoll, Tuvalu. December 2005/Arthur Webb
- 055 Vanuatu – Institutionalising and mainstreaming integrated coastal management. [Fieldwork undertaken July 2005, Workshop for Draft Policy Recommendations December 2005]/Netatua Pelesikoti
- 056 Project Progress Summary Report January to December 2005/Stephen Booth, Aarti Naidu & Bhaskar Rao
- 057 Solomon Islands Country Mission and Technical Advisory Report – Stakeholder Consultations and Aggregates Source Assessment in Honiara and Ghizo Island, Western Province. 12-18th July 2005/Akuila Tawake
- 058 EU EDF8/EDF9 – SOPAC /EU Reducing Vulnerability of Pacific ACP States, 2006 Work Plan and Budget. RESTRICTED/Bhaskar Rao & Mohinish Kumar
- 059 Samoa Technical Report – A Review of the Savai'i volcanic hazard map/Shane Cronin, Michael Bonte-Grapentin & Karoly Nemeth
- 060 Proceedings of the Cook Islands 1st Multi-Stakeholder Consultations. Ministry of Works Conference Room, Rarotonga & Council Chambers, Aitutaki, 30th July – 13th August 2005/Netatua Pelesikoti, Arthur Webb & Stephen Booth
- 061 Niue Technical Report – Groundwater Resources Investigations on Niue Islands, March 2006/GWP Consultants, UK
- 062 Papua New Guinea Mission Report, 13-26 May 2006/Stephen Booth
- 063 Vanuatu Country Mission Report – Composting Toilets: Eco-Sanitation Workshop; Tagabe River Management Committee, 9-13 August 2004/ Leonie Crennan & Stephen Booth
- 064 Palau – Proceedings of the 1st Multi-Stakeholder Consultations, 14-21 November 2004/Arthur Webb, Netatua Pelesikoti & Stephen Booth
- 065 Nauru – Proceedings of the 1st Nauru Multi-Stakeholder Consultation, Menen Hotel, Nauru, 13 July 2005/Arthur Webb & Stephen Booth
- 066 Tuvalu Technical Report – Improving Water Security on Funafuti Atoll, August 2006/Stephen Booth
- 067 Federated States of Micronesia – Proceedings of the 1st Multi-Stakeholder Consultations, Palikir, Pohnpei, 22-26 November 2004/Arthur Webb, Netatua Pelesikoti & Stephen Booth
- 068 Republic of the Marshall Islands – Proceedings of the 1st Multi-Stakeholder Consultations, Ministry of Foreign Affairs Conference Room, Majuro, 19 November – 3 December 2004/Netatua Pelesikoti, Arthur Webb & Stephen Booth
- 069a Samoa – Integrated Flood Management, Apia/Litea Biukoto & Michael Bonte-Grapentin
- 069b Samoa – GPS Survey of the Vaisigano River and its surrounds for flood hazard mapping/Litea Biukoto & Michael Bonte-Grapentin
- 069c Samoa – Technical Report: Capacity building on flood risk management, 13 July – 3 August 2006 (WS 3.5.4)/Darren Lumbruso, Ausetalia Titimaea, Amataga Penaia & Michael Bonte-Grapentin
- 069d Samoa – Training Report: Capacity building on flood risk management, 13 July – 3 August 2006 (WS 3.5.4)/Darren Lumbruso, Ausetalia Titimaea, Amataga Penaia & Michael Bonte-Grapentin
- 069e Samoa Floodplain Management – A Guideline for Planning and Development Assessment (with specific reference to Vaisigano River), March 2007/Netatua Pelesikoti, Michael Bonte & Litea Biukoto
- 069f Samoa Flood Management Action Plan 2007-2012 (with specific reference to Vaisigano River), March 2007/Netatua Pelesikoti, Michael Bonte & Litea Biukoto
- 069g Samoa Technical Report – Economic Analysis of Flood Risk Reduction Measures for the Lower Vaisigano Catchment Area, Samoa/Allison Woodruff
- 070 Six-monthly progress report to June 2006/Bhaskar Rao & Aarti Vandana Naidu
- 071 Kiribati Technical Report – Economic analysis of aggregate mining on Tarawa, July 2006/Greer Consulting Service
- 72 Kiribati Technical Report – Extent of Household Aggregates Mining in South Tarawa and Proposed Integrated Monitoring Framework for Tarawa Lagoon, January 2007/Netatua Pelesikoti
- 73 Project Summary Progress Report June to December 2006/Aarti Naidu & Bhaskar Rao
- 74 Samoa Technical Report – Aggregate sources assessment in selected parts of Upolu and Savai'i Islands, Samoa. June 2006/Akuila Tawake
- 75 Tuvalu Technical Report – Assessment of salinity of groundwater in swamp taro ((*Cyrtosperma chamissonis*) "Pulaka" pits in Tuvalu. December 2006/Arthur Webb
- 76 Nauru Mission Report – Republic of Nauru KRA2 (Water) Mission Report, 27 October to 5 November 2006/Stephen Booth
- 77 Samoa – Country Mission and Technical Advisory Report: Aggregate assessment in selected parts of Savai'i and Upolu islands. 1-15 October 2005/Akuila Tawake

- 78 2007 Work Plan & Budget/Bhaskar Rao & Aarti Naidu
- 79 Samoa Technical Note – Hydrogeological Liaison Mission to Savai'i, 19-24 September 2006/Stephen Booth
- 80 Nauru Technical Report – Rainwater Harvesting: Asset Condition Survey of Domestic Infrastructure, 13-23 February 2007/Stephen Booth, Elizabeth Lomani-Whippy, Arieta Navatoga-Sokota & Vilisi Tokalauvere
- 81 Republic of the Marshall Islands Technical Mission Report – KRA 2 (Water) Mission, Laura, Majuro, 20-26 October 2006/Stephen Booth
- 82 Republic of Palau Technical Mission Report – KRA2 (Water) Mission, Melekeok State, Babeldaob, 7-20 October 2006/Stephen Booth
- 83 Vanuatu – Government of the Republic of Vanuatu Disaster Risk Reduction and Disaster Management National Action Plan (2006-2016)/Netatua Pelesikoti, Government of Vanuatu & Pacific Disaster Risk Management Partnership Network
- 84 Papua New Guinea Preliminary Technical Report – Disaster Risk Assessment (especially tsunami) of the Vanimo area, West Sepik Province/ H.Gedikile, M.David, P.Ila'ava, B.Karona, A.Lakamanga, D.Dalle & M. Bonte-Grapentin
- 85 Vanuatu Technical Report – Assessment of Water Quality Monitoring Capacity, 2-9 May 2006/Tasleem Hasan & Stephen Booth
- 86 Republic of the Marshall Islands Technical Report – Water Quality Monitoring and Water Demand Management, Majuro, 21 July – 5 August 2006/Stephen Booth, Tasleem Hasan & Mathias Kleppen
- 87 Solomon Islands Technical Mission Report – Water Quality Monitoring and Water Demand Management, Honiara, 28-29 September 2006/ Stephen Booth, Tasleem Hasan & Mathias Kleppen
- 88 2nd Mission Report: Process and Lessons Learned from the Development of the Vanuatu Disaster Risk Management National Action Plan, 10-24 August 2006.RESTRICTED/Netatua Pelesikoti
- 89 Samoa Mission Report: Samoa Floodplain Guideline and Action Plan/Netatua Pelesikoti, Michael Bonte-Grapentin & Allison Woodruff
- 90 Solomon Islands Country Mission and Technical Advisory Report: Geologic impacts of the 2nd April 2007 earthquake and tsunami on the islands and marine environment of the Western Province, Solomon Islands, 6-24 May 2007/Brian G. McAdoo, Jens C. Kruger, Kelly L. Jackson, Andrew L. Moore, Wilson B. Rafiau & Braddley Tiano
- 91 Fiji Technical Note – Rapid assessment of erosion and flooding at Korotasere Village, Vanua Levu and Delaivadra and Salevukoso villages, Druadrua Island/Arthur Webb
- 92 EU Work Plan and Budget 2007 Revised/Bhaskar Rao
- 93 Six-monthly Jan to June 2007/Bhaskar Rao
- 94 EDF9 Revised Budget/Bhaskar Rao
- 97 Fiji Country Mission and Technical Advisory Report: Aggregates Assessment and Awareness in Selected Parts of the Navua River, 15-21 May 2005/Akuila Tawake & Vilisi Tokalauvere
- 98 Samoa – Proceedings of the Samoa National Aggregates Workshop: "Towards a Sustainable Aggregates Industry in Samoa. Public Service Conference Room, Government Building, Apia, Samoa. 21-22 February 2007/Akuila Tawake & Siosinamele Lui
- 99 Fiji – Preliminary Environmental Impact Assessment Report – Aggregates Extraction in Selected Sites of the Navua and Sigatoka Rivers and the Sigatoka Sand Dunes, South Viti Levu/Maleli Naiova (Principal Consultant)
- 100 Solomon Islands – Proposed Framework and Guidelines for Sustainable Aggregates Development and Management in the Solomon Islands/ Akuila Tawake
- 101 Fiji Technical Report – Application of GPS/GIS for the Department of Water and Sewerage/Vilisi Tokalauvere & Elizabeth Whippy
- 102 Palau Technical Report – Review and rehabilitation of hydrological monitoring applications – Republic of Palau/ John Fenwick, (NZ) National Institute of Water & Atmospheric Research Ltd.

## EU-SOPAC Project Bathymetry Charts

Over thirty bathymetry charts have been plotted and are available for specific intervention areas in the following countries:

- Fiji Islands
- Kiribati
- Marshall Islands
- Nauru
- Niue
- Papua New Guinea
- Samoa
- Solomon Islands
- Tonga
- Tuvalu
- Vanuatu

Some countries e.g. Samoa and Vanuatu have had composite bathymetry charts compiled and plotted that combines the multibeam data collected during the EU Project and other data known and accessible to the SOPAC Secretariat. Write to the SOPAC Secretariat for more details.

## JOINT CONTRIBUTIONS REPORTS

- 187 State-of-the-art solutions for 3D hydrodynamic modelling applied to aquaculture in atoll lagoons. IRD, AIMS (JCU), Hawaii Institute of Marine Biology (UH), Universite catholique de Louvain, SOPAC, IFREMER, Observatoire Geodesique de Tahiti, Meteo France, Service de le Perliculture (Tahiti), Service de la Perche (Tahiti) and Service Hydrographique et Oceanographique de la Marine (Tahiti).
- 188 Pacific Islands Regional Ocean Policy and Framework for Integrated Strategic Action. CROP Marine Sector Working Group, 2005.
- 189 Regional Energy Officials' Meeting, 23-24 April 2007, Rarotonga, Cook Islands – Proceedings. CROP Energy Working Group, August 2007.
- 190 Pacific Energy Ministers' Meeting, 25-26 April 2007, Rarotonga, Cook Islands – Proceedings. CROP Energy Working Group, August 2007.
- 191 Mobilising People Towards Integrated Water Resources Management – A Guide to Community Action.

## RESTRICTED CIRCULATION REPORTS

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

- 49 Quarterly Progress Report – Third Quarter 2006.
- 50 Review of Namdrik Atoll Solar Project, Republic of the Marshall Islands – Final Report.
- 51 Assistance to the Palau Government in the Development of a National Energy Conservation Strategy – Request for Quotation.
- 52 Review of Solomon Islands Electricity Authority Base Tariff – Request for Quotation.
- 53 Review of Tuvalu Electricity Corporation Tariff – Request for Quotation.
- 54 Tuvalu Mission Report – 30 April to 3 May – Back to Office Report.
- 55 Solomon Islands – Enhancing SIEA GIS to a Demonstration Unit.
- 56 Draft Concept Note: PIEPSAP Phase II.
- 57 Pacific Islands Energy Strategic Action Plan (PIESAP) 2005-2007.
- 58 Quarterly Progress Report – First Quarter 2006.
- 59 2007/6 Quarterly Progress Report – Fourth Quarter 2005.
- 60 2007/6 Quarterly Progress Report – Fourth Quarter 2006.
- 61 Nauru Energy Policy Consultation – Back to Office Report.
- 62 Review of Solomon Islands Electricity Act and Rural Electrification. CONFIDENTIAL.
- 63 Federated States of Micronesia Mission – Back to Office Report.
- 64 Quarterly Progress Report – Second Quarter 2007.
- 65 Samoa Mission – Back-to-Office Report: Progress Control PIEPSAP and Project Steering Committee.
- 66a Establishment of a Management Information System at the Electric Power Corporation of Samoa. (Phase 1: Inception Report).
- 66b Establishment of a Management Information System at the Electric Power Corporation of Samoa. (Phase 2: Training Report).
- 66c Establishment of a Management Information System at the Electric Power Corporation of Samoa. (Phase 3: Development Report).
- 66d Establishment of a Management Information System at the Electric Power Corporation of Samoa. (Phase 4: Deployment Report).
- 66e Establishment of a Management Information System at the Electric Power Corporation of Samoa. (Phase 5: Final Report and User Manuals).
- 67 Nauru Consultation on National Energy Policy Framework – Back to Office Report.
- 68 Biofuel from Coconut Resources in Rotuma. (A Feasibility Study on the Establishment of an Electrification Scheme using local Energy Resources). PREPRINT VERSION.
- 69 Feasibility of grid-connected wind power for Rarotonga, Cook Islands.
- 70 Samoa National Energy Policy Framework Consultation – Back to Office Report.

## Other newsletters

Mission Reports – 24 issues  
GIS & Remote Sensing Newsletter – 2 issues  
Pacific Energy News (PEN) – 2 issues  
Snapshots (CRP News bulletin) – 3 issues  
Pacific Partnership Initiative on Sustainable Water Management – 4 issues  
Pacific Disaster Risk Management Partnership Network news – 3 issues

## Appendix 3: SECRETARIAT STAFF LIST (Oct 06 - Nov 07)

POSITION	NAME	COUNTRY OF ORIGIN	DATE JOINED SOPAC	CONTRACT START	CONTRACT END
<b>DIRECTORATE</b>					
Director	Cristelle Pratt	New Zealand	May-00	Feb-07	Feb-10
Deputy Director	Bhaskar Rao	Fiji	May-04	Sep-05	Sep-08
Executive Assistant	Litia Waradi	Fiji	Apr-89	Jan-07	Dec-09
AVI Communications Adviser	Shane Fairlie	Australia	Jul-06	Jul-06	Mar-07
Project Assistant – SOPAC/EU Project	Arti Naidu	Fiji	May-02	May-06	Mar-07
Communications & Media Officer	Naziah Ali	Fiji	May-07	May-07	May-08
Programme Assistant – SOPAC EU/EDF Project	Elina Moceitai	Fiji	Sep-07	Sep-07	Dec-07
<b>OCEAN &amp; ISLANDS PROGRAMME</b>					
Manager Ocean & Islands	Mary Power	Australia	Jan-06	Jan-06	Jul-07
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	Oct-06	Dec-07
Senior Adviser – Geoscience Training	Vacant				
Senior Adviser – Marine Geoscience	Vacant				
Adviser – Technical (Electronics)	Simon Young	Fiji	Jan-93	Jan-05	Jan-08
PI –GOOS Coordinator	Paul Eastwood	United Kingdom	Apr-07	Apr-07	Apr-10
Adviser Aggregates & Coastal Processes	Arthur Webb	United Kingdom	Jul-04	Jul-07	Dec-08
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	Dec-08
Programme Assistant – Ocean & Islands	Frances Dobui	Fiji	Oct-03	Oct-06	Oct-07
Temp Programme Assistant – Ocean & Islands	Virginia Rokoua	Fiji	Jan-07	Oct-07	Jan-08
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	May-06	Dec-07
Assistant Geology Technician	Donato Roqica	Fiji	Jun-07	Jun-07	Jun-10
Assistant Electronics Technician	Maleli Turagabeci	Fiji	Apr-07	Apr-07	Apr-10
EU Attachment	Naomi Biribo-Atauea	Kiribati	Jul-04	Jan-07	Dec-07
AVI Database Development Officer	Brian Bishop	Australia	Mar-07	Mar-07	Mar-09
AVI Tsunami Risk GeospatialData Officer	Helen Pearce	Australia	Mar-07	Mar-07	Mar-08
ODI Resource Economist	Angela Ambroz	USA	Oct-07	Oct-07	Oct-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	Romano Reo	Kiribati	Nov-07	Nov-07	Dec-07
Fellowship Attachment	Rodson Aru	Vanuatu	Nov-07	Nov-07	Dec-07
Fellowship Attachment	Amrit Raj	Fiji	Apr-07	Jul-07	Dec-07
Fellowship Attachment	Shareen Taiyab	Fiji	Aug-07	Aug-07	Dec-07

COMMUNITY LIFELINES PROGRAMME					
Manager Community Lifelines	Paul Fairbairn	New Zealand	Jan-98	Sep-06	Sep-09
Adviser – ICT/CLP	Siaosi Sovaleni	Tonga	Oct-05	Oct-06	Oct-08
Water Resource Specialist	Stephen Booth	United Kingdom	Feb-03	Feb-03	Aug-07
Senior Adviser EU–GIS and Remote Sensing	Wolf Forstreuter	Germany	Jan-99	Jan-06	Dec-07
Senior Adviser EU–ICT Specialist	Franck Martin	France	Sep-93	Jan-06	Dec-07
Manager – Water, CLP	Marc Overmars	Netherlands	Apr-00	Jan-06	Dec-09
Adviser – Energy (PIEPSAP Project)	Anare Matakiviti	Fiji	Feb-00	Sep-07	Aug-08
Adviser – Water Resources, Supply & Sanitation	Vacant				
Senior Project Adviser – Energy	Jan Cloin	Netherlands	Nov-03	Dec-06	Nov-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	Feb-10
Adviser – Energy	Rupeni Mario	Fiji	Oct-98	Apr-05	Apr-08
Regional Project Development Officer	Rhonda Bower	Fiji	Nov-98	Jul-06	Jul-08
Project Adviser – IWRM	James Dalton	United Kingdom	Mar-07	Mar-07	Mar-08
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-06	Jun-08
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	Feb-10
Project Officer 9 – Energy	Koin Etuati	Kiribati	Jun-06	Jun-07	Jun-09
Project Officer 10 – Energy	Frank Vukikomoala	Fiji	Mar-07	Mar-07	Mar-08
Project Officer 11 – PIEPSAP	Yogita Bhikabhai	Fiji	Jan-02	Sep-07	Nov-07
Project Officer 12 – Water Safety Plans	Davendra Nath	Fiji	Jan-06	Jan-06	Jan-09
Project Officer 13 – HYCOS	Linda Yuen	Fiji	Jun-05	Jan-07	Dec-09
Project Officer 14 – HYCOS	Komal Raman	Fiji	Jan-06	Jan-07	Dec-09
Project Officer 15 – Water Partnerships	Sanjeshni Naidu	Fiji	Aug-05	Aug-07	Aug-10
Project Officer 16 – GIS & Remote Sensing	Elizabeth Lomani-Whippy	Fiji	Feb-04	Feb-06	Dec-07
Project Officer 17 – GIS/RS & ICT	Joy Papao	Solomon Islands	Jun-04	Jun-07	Jun-08
Project Officer 18 – Water Sector	Arieta Navatoga	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-07	Feb-08
EU Intern – Fiji	Vilisi Tokalauvere	Fiji	Feb-04	Feb-06	Dec-07
Consultant – PIEPSAP Project	Leba Gaunivivaka	Fiji	Mar-07	Mar-07	Jun-07
Trainee Attachment	Wayne Reiher	Kiribati	May-07	May-07	Jul-07
Trainee Attachment	Loia Tausi	Tuvalu	Oct-07	Oct-07	Nov-07
Trainee Attachment	Teresia Dodolai	Fiji	Oct-07	Oct-07	Nov-07
Trainee Attachment	Atishma Lal	Fiji	Jun-07	Jun-07	Jul-07
Research Assistant	Andreas Antoniou	Greece	Oct-07	Oct-07	Feb-08
EU/EDF 8 Graduate Student Attachment	Etuate Cocker	Tonga	Mar-07	Jun-07	Dec-07
COMMUNITY RISK PROGRAMME					
Manager Community Risk	Mosese Sikivou	Fiji	Oct-06	Oct-06	Oct-09
Risk Analyst Specialist	Michael Bonte	Germany	Jun-03	Jun-06	Dec-07
Disaster Mitigation Adviser	Vacant				
Programme Director – PDRMP	Kathryn Hawley	USA	Feb-01	Aug-06	May-08
Adviser Sustainable Development	Netatua Prescott	Tonga	Aug-04	Aug-07	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	Tukatara Tangi	Cook Islands	Sep-04	Aug-06	May-08
TAF/OFDA Materials Development Specialist	Emele Matawaqa	Fiji	Aug-06	Aug-06	May-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	Stephanie Zoll	Germany	Mar-07	Mar-07	Aug-07

## CORPORATE SERVICES

Manager Corporate Services	Mohinish Kumar	Fiji	Mar-98	Sep-06	Sep-09
Adviser – Publications	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-05	Aug-08
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	Unaishi 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-07	Mar-08
Assistant Finance Officer II	Asinate Nawamea	Fiji	Dec-05	Jun-07	Jun-08
Project Officer 19 – Library	Dorene Naidu	Fiji	Sep-04	Sep-07	Sep-10
Project Officer 20 – Publish./Graphic Arts	Reuben Vulawalu	Fiji	Apr-01	Mar-07	Mar-10
Project Officer 21 – Web Developer	Vacant				
Project Officer 22 – ICT Training	Avinash Prasad	Fiji	Jun-99	Jan-07	Dec-07
Administrative Assistant – SOPAC/EU Project	Subha Ram	Fiji	Sep-04	Jan-06	Dec-07
Administrative Assistant	Arishma Lal	Fiji	May-06	Aug-07	Aug-08
Assistant Project Officer IV – Publications/Library	Elenoa Rokodi	Fiji	Feb-03	Feb-07	Feb-08
Finance Officer Projects	Mohammed Irfaq	Fiji	Oct-07	Oct-07	Oct-10
Security Officer	Cama Temo	Fiji	Sep-02	Jan-07	Dec-07
Watchman/Cleaner	Ajay Chand	Fiji	Dec-00	Aug-07	Aug-08
Technical Assistant	Setareki Ratu	Fiji	Oct-86	Jun-07	Dec-07
Carpenter	Nand Kumar	Fiji	Jun-98	Jan-07	Dec-07
Gardner	Are Waione	Fiji	Mar-96	Jan-07	Dec-07
Assistant Carpenter/Handyman	Arun Kumar	Fiji	Feb-07	Sep-07	Sep-08
Casual Handyman	Jitendra Singh	Fiji	Mar-07	Sep-07	Dec-07
Office Cleaner	Reijeli Luma	Fiji	May-06	Sep-07	Dec-07
Trainee Attachment – Finance	Ritesh Chandra	Fiji	Jan-07	Sep-07	Dec-07
Trainee Attachment – Finance	Genevieve Ayin	FSM	Mar-07	Mar-07	Jun-07
Trainee Attachment – Admin	Libotha Kaminaga	Marshall Islands	Aug-07	Aug-07	Jan-08
Trainee Attachment – PLU	Lore Ratuwaya	Fiji	Feb-07	Nov-07	Dec-07
Trainee Attachment – PLU	Arun Chand	Fiji	Feb-07	Aug-07	Dec-07
Trainee Attachment – PLU	Sereima Savu	Fiji	Feb-07	Feb-07	May-07
Trainee Attachment – PLU	Arun Lata	Fiji	Nov-07	Nov-07	Dec-07
Trainee Attachment – PLU	Reshma Prasad	Fiji	Nov-07	Nov-07	Dec-07
Trainee Attachment – ICT	Digitaki Tuberi	Fiji	May-07	Aug-07	Sep-07

## Appendix 4: LIST OF ACRONYMS

ACP	– African, Caribbean and the Pacific countries of the Lome Convention
AFAC	– Australasian Fire Authorities Council
APWF	– Asia-Pacific Water Forum
AIMS/JCU	– Australian Institute of Marine Science/James Cook University
ATWS	– Australia Tsunami Warning System
AusAID	– Australian Agency for International Development
AVI	– Australian Volunteers International
AYA	– Australian Youth Ambassadors
BOM	– Bureau of Meteorology (Australia)
CEO	– Chief Executive Officer
CGPS (cGPS)	– Continuous Global Positioning System
CLP	– Community Lifelines Programme (SOPAC)
CMS	– Content Management System
CROP	– Council of Regional Organisations of the Pacific (formerly SPOCC)
CRP	– Community Risk Programme (SOPAC)
CS	– Corporate Services
CSD	– Commission on Sustainable Development (of United Nations)
CTA	– Technical Centre for Agriculture and Rural Cooperation
DGMWR	– Department of Geology, Mines and Water Resources (Vanuatu)
DISPAC	– Disaster Risk Management in the Pacific Database
DRM	– Disaster Risk Management
EBM	– Ecosystem Based Management
eCS	– extended Continental shelf
EDF	– European Development Fund
EEZ	– Exclusive Economic Zone
EPA	– Environment Protection Agency
EPC	– Electric Power Corporation (Samoa)
EU	– European Union
EU/NIP	– European Network on Industrial Policy
EVI	– Environmental Vulnerability Index
EWG	– Energy Working Group (CROP)
FAO	– Food Agriculture Organisation (UN)
FEA	– Fiji Electricity Authority
FEMM	– Forum Economic Ministers Meeting
FIELD	– Foundation for International Environmental Law and Development
FOSS	– Free/Open Source Software
FSM	– Federated States of Micronesia
GA	– Geoscience Australia
GEF	– Global Environmental Facility (World Bank-UNEP-UNDP)
GIS/RS	– Geographic Information Systems and Remote Sensing
GPA	– Global Plan for Action for the Protection of the Marine Environment from Land-based Activities
GPS	– Global Positioning System
HELP	– Hydrology for Environment, Life and Policy
HTP	– Hydrological Training Programme
HYCOS	– Hydrological Cycle Observing System
ICT	– Information and Communication Technologies
ICU	– [Pacific] Islands Climate Update (NZAID)
IEC	– Joint Information, Education and Communication Working Group
IFRC	– International Federation of the Red Cross and Red Crescent Societies
IFREMER	– Institut Francaise de Recherche pour l'Exploitation de la Mer
IAS/USP	– Institute of Applied Science (University of the South Pacific)
IOC	– Intergovernmental Oceanographic Commission (of UNESCO)
IOSN-PIC	– Pacific Islands node of the International Open Source Network
IPCC	– Intergovernmental Panel on Climate Change
IRCSA	– International Rainwater Catchment Systems Association
IRD	– Institut de Recherche pour le Développement
ISP	– Internet Service Provider
IWRM	– Integrated Water Resources Management
KOHA	– Open Source Integrated Library System
KRA	– Key Result Area
LAN/WAN	– Local Area Network/Wide Area Network
LTA	– Land Transport Authority
MDG	– Millennium Development Goals
MELAD	– Ministry of Environment, Lands and Agricultural System
MoU	– Memorandum of Understanding
MVN	– Melanesian Volcanological Network

NAP	– National Action Plan
NDMO	– National Disaster Management Office (various countries)
NGO	– Non-Government Organisation
NIWA	– National Institute for Water and Atmospheric Research (New Zealand)
NOAA	– National Oceanographic and Atmospheric Administration (US)
NZ	– New Zealand
NZAID	– New Zealand Agency for International Development
ODI	– Overseas Development Institute
PacINET	– Pacific Island Partnership Network for Taxonomy
PacTOC	– Pacific Telecenter Online Community
P-DB	– Petroleum Data Bank
PDMP	– Pacific Disaster Risk Management (Training) Programme
PEG	– Pacific Energy and Gender Network
PEMM	– Pacific Energy Ministers' Meeting
PENTAG	– Pacific Emergency Management & Training Advisory Group
PEN	– Pacific Energy News (SOPAC)
PWVG	– Regional Programme for Water Governance
PIC	– Pacific Island Country
PICISOC	– Pacific Islands Chapter of the Internet Society
PIEPSAP	– Pacific Islands Energy Policies and Strategic Action Plan
PIFS	– Pacific Islands Forum Secretariat
PI-GCOS	– Pacific Global Climate Observing System
PI-GOOS	– Pacific Islands – Global Ocean Observing System
PIRMBIS	– Pacific Islands Regional Maritime Boundaries Information System
PIROF-ISA	– Pacific Regional Oceans Policy and Framework for Integrated Strategic Action
PITA	– Pacific Islands Telecommunications Association
PLU	– Publications and Library Unit (of SOPAC Work Programme)
PMESCP	– Pacific Micro Energy Service Companies Project
PMU	– Project Management Unit
PNG	– Papua New Guinea
PPAC	– Pacific Plan Action Committee
PREFACE	– Pacific Rural Renewable Energy France-Australia Common Endeavour Project
PTWS	– Pacific Tsunami Warning System
PWA	– Pacific Water Association
RAO	– Regional Authorising Office (EU)
REEEP	– Renewable Energy and Energy Efficiency Partnership
REM	– Regional Energy Meeting
REP-PoR	– Regional Energy Programme for Poverty Reduction
RMI	– Republic of the Marshall Islands
ROC	– Republic of China
SDWG	– Sustainable Development Working Group (CROP)
SEAFRAME	– Sea Level Fine Resolution Acoustic Measuring Equipment
SIDA	– Swedish International Development Cooperation Agency
SIDS	– Small Island Developing States
SIEA	– Solomon Islands Electricity Authority
SOPAC	– Pacific Islands Applied Geoscience Commission; and also – Secretariat for the Pacific Islands Applied Geoscience Commission
SPC	– Secretariat of the Pacific Community
SPSLCMP	– South Pacific Sea Level and Climate Monitoring Project
SPTAW	– South Pacific Tsunami Awareness Workshop
TAF/OFDA	– The Asia Foundation/Office of US Foreign Disaster Assistance
UH	– University of Hawai'i
UNCLOS	– United Nations on the Law of the Sea
UNDP	– United Nations Development Programme
UNEP	– United Nations Environment Programme
UNESCO	– United Nations Educational Scientific and Cultural Organisation
UNOCHA	– United Nations Office for the Coordination of Humanitarian Affairs (formerly UNDHA)
UNU	– United Nations University
UPS	– Uninterruptible Power Supply
(US)EPA	– United States Environment Protection Agency
USP	– University of the South Pacific
WBGFDRR	– World Bank Global Facility for Disaster Reduction and Recovery
WBWC	– Wide Bay Water Corporation
WERI	– Water and Environmental Research Institute of the Western Pacific (of University of Guam)
WHO	– World Health Organisation
WMO	– World Meteorological Organisation
WQM	– Water Quality Monitoring
WSP	– Water Safety Plans
WUE	– Water Use Efficiency
WVLC	– Water Virtual Learning Centre



Participants at the Official Opening of the 36<sup>th</sup> SOPAC Session at the Fa'onelua Convention Centre, Nuku'alofa, Kingdom of Tonga in November 2007.

