

SOPAC

ANNUAL REPORT SUMMARY

2004



South Pacific Applied Geoscience Commission

SOPAC Members



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Director's Foreword



Cristelle Pratt
SOPAC Director

My assumption of the Director's Chair in early February of this year was on the wings of the Pacific Islands Regional Ocean Forum (PIROF), which was chaired by my predecessor Alf Simpson and which saw the development of a Pacific Islands Regional Ocean Framework for Integrated Strategic Action (PIROF-ISA) of our ocean priorities and issues. I can confidently say that I have inherited from Alf Simpson, a robust and healthy Secretariat, along with a strong strategic approach to our role in the regional agenda. Our commitment and engagement in the PIROF during the time of changeover is testament to this.

As our development partners are an imperative for effective work programme implementation and delivery, I believe that it is pertinent for me firstly to acknowledge and thank them for the level of support that SOPAC continued to enjoy in 2004; and especially to applaud those that have embraced the strategic programme approach and have agreed to providing support in one or across our three technical work programme areas.

We have emerged from a phase of change and transition initiated in 2001, into a well considered, strategic programme environment. This current state is particularly exciting if we remain mindful of our responsibilities to our membership that have an interest in what we can give them.

At the regional level, in terms of SOPAC programme delivery, there is a real need to continually monitor the bigger framework in which we operate. It is likely that the Pacific Plan will, and should, provide that overall framework for the programming of our regional priorities. Therefore acknowledging and exploiting synergies with other CROP organisations as well as non-government organisations remains important. As well, we must encourage and advocate future regional programming initiatives to be more integrated and collaborative, multi-disciplinary in nature and implemented by multiple agencies.

In 2004 SOPAC has provided technical advisory support to Pacific Island countries through a number of important global initiatives, which have implications for us all. They include the 12th Meeting of the Commission on Sustainable Development, which considered water and sanitation [clearly a priority for our region] and, all of the preparatory meetings for the Barbados + 10 review process and the 2nd World Conference for Disaster Risk Reduction. Technical support to Pacific Delegations for these initiatives will continue until early 2005.

At policy level, 2004 saw the development of a new corporate planning document – SOPAC Strategic Plan 2005-2009, following completion of

an independent review of the 2002-2004 Corporate Plan. The new strategic plan will ensure that we remain strategic and responsive to addressing the needs and priorities of the membership.

At the service delivery level against the work programme, we rely on recruiting and retaining a cadre of appropriately qualified personnel who are held accountable through the performance management system, which is well established within the Secretariat. Organisational delivery being intricately linked to the approved work programme, it is imperative that the performance management system for staff closely links to the outputs that they are contracted and expected to deliver against. Aside from monitoring and evaluating day-to-day operational performance, the regular meetings of the Executive Management Team have also focused on discussing matters of a strategic nature such as programme sustainability through identifying and securing strategic partnerships and support.

In 2004, the SOPAC Governing Council also approved the establishment of a programme evaluation and monitoring mechanism through which an independent scrutiny of the technical output of work programme delivery would be ensured. This mechanism (to begin operations in 2005) is to provide the SOPAC membership with independent verification of the quality of the science and its application in the Secretariat's work programme delivery. These independent report cards will provide the membership and our development partners with a level of confidence and comfort in the technical soundness of work programme output.

This report summary highlights achievements under the three key technical work programmes namely, Ocean and Islands, Community Lifelines and Community Risk. As the Technical Secretariat of SOPAC, the delivery against the technical work programme remains our key focus.

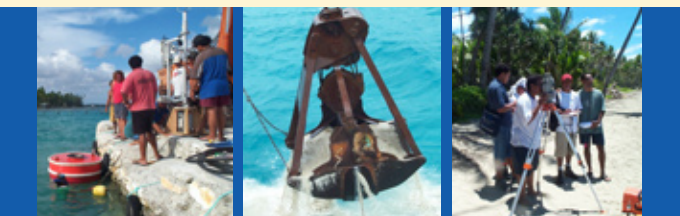
I am pleased to present the 2004 Annual Report Summary. With the longer-term timeline of our new strategic planning document to cover five years instead of three, I am confident our focus on work programme delivery would be sharpened and our yearly output enhanced. The consistently high level of output during this, my first year as Director, has to be attributed to the dedication and professionalism of the staff of the Secretariat and I publicly put on record my gratitude for this.



December 2004

Introduction

KEY WORK PROGRAMMES



Ocean and Islands

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



Community Lifelines

To improve communities' access to energy, water and sanitation, and information and communication technologies for sustainable livelihoods



Community Risk

To improve hazard assessment and risk management practices to build safer communities

What does SOPAC do ?

SOPAC's work focuses on providing assistance to its member countries in three key programme areas: Ocean and Islands, Community Lifelines and Community Risk.

Ocean and Islands Programme is an integrated programme focused on research, development and management of non-living resources in ocean and island systems addressing issues relating to seabed resources, energy, maritime boundary delimitation and monitoring of ocean processes.

Community Lifelines Programme is a diversified programme that strengthens national capacities in energy, water and sanitation, information and communications.

Community Risk Programme is a comprehensive programme aimed at reduction of community vulnerability through improved hazard assessment and risk management.

These three key programme areas are supported by Corporate Services. To effectively provide these support services, SOPAC maintains an information technology unit, provides publication and library services, and offers technical and field services for specific project work.

Who benefits from 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 and New Caledonia are associate members. Any island member country can request assistance from SOPAC.

Benefits accrue to island member countries directly through the provision of basic geological knowledge and indirectly, through improvements in land and ocean use, leading to improved health through water and sanitation provision, wealth generation through the development of mineral resources, hazard and disaster management and sustainable development by taking into account the geo-environmental impacts of development.

Who pays for SOPAC ?

SOPAC is funded by member-country contributions and supported by the following: Australia, the Commonwealth Secretariat, Denmark, the European Union, Fiji Islands, France, Ireland, Japan, New Zealand, Office of US Foreign Disaster Assistance, Taiwan/ROC, the United Kingdom, and certain UN agencies. Where donors have provided assistance for specific activities in the Work Programme, either at the regional or country level, this is acknowledged in the Annual Report Summary.

The Ocean and Islands Programme undertakes work within three component areas: Resource Use Solution, Monitoring Physical and Chemical Change of Ecosystems, and Ocean Governance. The following narrative provides highlights of activities undertaken which seek to contribute to the ultimate goal of improved scientific knowledge of ocean and islands ecosystems for the sustainable management of natural resources.

Resource Use Solutions

Under Resource Use Solutions, which seeks to provide appropriate technologies, field-based scientific assessments, mapping and surveying to address critical issues of development, unsustainable exploitation of marine and mineral resources, land degradation, coastal erosion, declining water quality particularly within the coastal zone, and habitat degradation, the following suite of activities were undertaken during the year:

Two surveys were undertaken within the Stage II Phase 2 programme of the Japan-SOPAC Cooperative Deep-sea Minerals Programme in the Exclusive Economic Zone's (EEZ) of Niue and Kiribati, respectively. The surveys utilised the Japanese Deep Sea Research Vessel Hakurei Maru No 2, and planning is underway for cruises in Fiji's and Federated States of Micronesia's EEZs for the final phase of the programme over the period 2004-2005.

Considerable progress has been made towards the consolidation of the Pacific Islands Regional Maritime Boundaries Project during 2004 with the information system (PIRMBIS) now fully operational, with maintenance and data-entry well underway. Adaptation of the University of Melbourne programme MarZone to incorporate archipelagic baselines was completed under contract by the University of Melbourne enabling data entry from national maps and survey information to be translated utilising MarZone and entered into PIRMBIS. As part of efforts to develop in-country capacity, two workshops for survey personnel from Fiji, Samoa, Tuvalu, and Niue; and Papua New Guinea, Tonga, Solomon Islands, Vanuatu and Marshall Islands, respectively, were held on PIRMBIS and the use of the translation tool MarZone utilising in-country survey and map data.

Electronic and hardcopy products comprising integration of datasets into GIS, maps and reports with recommendations, which are the result of mapping and geophysical surveys carried out in the Federated States of Micronesia, and the Marshall Islands were finalised and in-country consultations held with a number of stakeholders in order to raise awareness of data uses amongst as broad a group of officials as possible. In addition, assessment was undertaken of potential quarry sites for Pohnpei, Federated States of Micronesia for

Pohnpei Environmental Protection Agency with followup consultations on the use of data collected planned for late 2004.

Two multi-beam bathymetric mapping surveys of Samoa (Northern and Eastern Savai'i) and Tonga (Tongatapu and Niua'fou) for Island Systems Management were completed and results are anticipated to be delivered under the SOPAC-EU EDF8 project.

With regard to capacity building activities, the third year of the current cycle of the Certificate in Earth Science and Marine Geology (CESMG) was completed, with fifteen students from nine countries successfully completing two courses in Hydrology and Hydrogeology and Earth



Monitoring buoy, Manihiki Lagoon. Part of initiatives to monitor physical oceanographic parameters in the lagoon to determine impacts on pearl fisheries.

Sciences in Development Projects, Hazards thereby fulfilling all academic requirements to be granted a Certificate in Earth Science and Marine Geology.

The completion of these courses marks the end of the final year in the current 3-year cycle of the CESMG course that has, since its inception in 1977, seen over 110 Pacific Island nationals graduate with technical qualifications in geology and earth science. Besides the CESMG, on-the-job training of Pacific Island nationals either in the field or at the Secretariat remains an inherent, important element of all technical activities of the Secretariat. Discussions have commenced with donors for the funding for a further cycle for CESMG.



CESMG students undertaking fieldwork.

Monitoring Physical and Chemical Change in Ecosystems

The component Monitoring Physical and Chemical Change in Ecosystems seeks to establish long-term, systems for the routine monitoring and observation of physical and chemical parameters, to provide timely and accessible information for an improved understanding of the ecosystems of our ocean and islands thereby enabling more prudent management of their resources.

Early in the year, and following the Pacific Island Regional Ocean Forum (PIROF), an I-GOOS Forum was convened that detailed progress with regard to ocean observing systems at the global and regional levels.

A major highlight for the year was the commissioning and deployment of monitoring buoys in the Penryhn and Manihiki Lagoons in the Cook Islands and the continuous, uninterrupted collection of long-term, sustained ocean and meteorological data (salinity, wind, temperature, pH, chlorophyll, dissolved oxygen, UV radiation) in real-time that completed 12 months of measurements at the end of November 2004. The project represents a practical and local example of coastal – GOOS and enables near-real time data to be made available to both the Cook Island Government and the pearl farmers on the atolls for management of pearl fisheries. Data is transmitted daily via satellite phone to SOPAC and processed information made available to the farmers and Government: data is additionally available on the SOPAC website.

The deployment of monitoring buoys within the Penrhyn and Manihiki atolls is but one of the various government and regional technical interventions in support of the black pearl industry in the Cook Islands. How the results of such studies are made use of within country and how effectively do they contribute to their intended outcomes? In search of answers, SOPAC undertook a cost-benefit analysis of technical studies undertaken on Manihiki atoll in support of the pearl industry (see feature story on page 10).

SOPAC developed a Terms of Reference for, and undertook a Call for Tenders for an assessment survey of port areas, Avatiu Harbour and adjacent coastal areas of Rarotonga, Cook Islands to provide development options to Government in terms of reducing vulnerability from flooding, storm surge and related events. In support of the study SOPAC completed a detailed multibeam study of the harbour environs and the region offshore to a depth of 300m for Rarotonga. This study is financed under AusAID bilateral funds.

SOPAC continued to assist with the implementation of the third phase of the South Pacific Sea Level and Climate Monitoring Project (SPSLCMP III) assisting in the field survey components, including the installation and maintenance of continuous global positioning systems, under the geodetic component of the project. The maintenance and calibration of the sea-level recorder network and databases (SEAFRAME sites) were also carried out. Training in precise leveling and Differential GPS were provided in Nauru, Vanuatu, Kiribati, Cook Islands, and Samoa.

SOPAC made field visits to all of the twelve countries participating in the project and wherever possible transferred survey skills to national counterparts during field missions. The Regional Data Archive for the

SPSLCMP III continued to be maintained and updated. Discussions commenced toward the latter part of the year on the development of a possible fourth phase for the project.

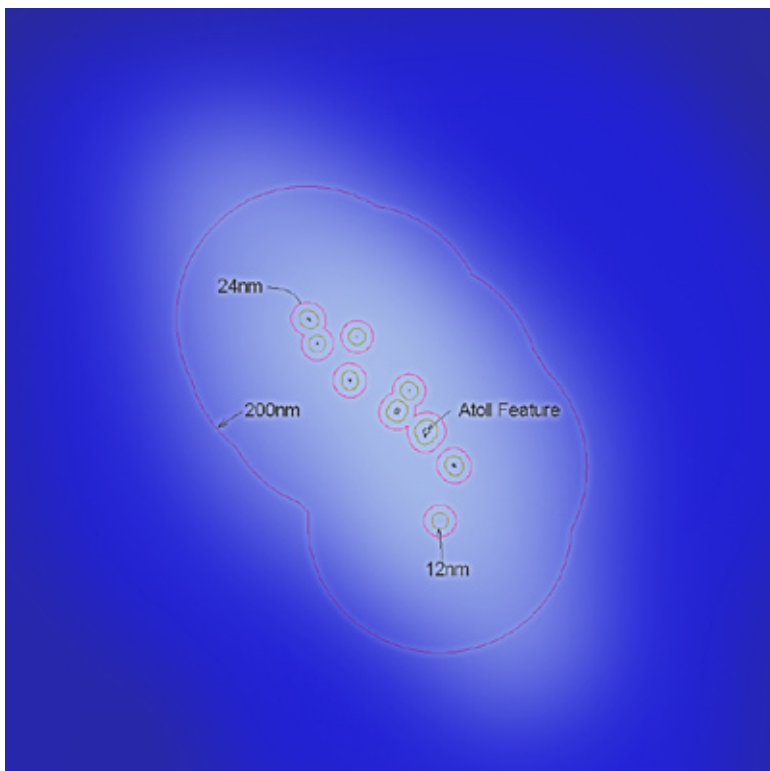
Ocean Governance

The Ocean Governance component seeks to contribute to the establishment of an integrated framework that ensures sound stewardship and management of ocean environments at the local, national and regional levels through assisting island member countries meet their obligations under relevant international and regional conventions and agreements such as the United Nations Convention on the Law of the Sea, as well as supporting the development and implementation of appropriate policy, planning and regulatory frameworks at national and regional levels.

Considerable progress was made towards the completion of a Marine Scientific Research (MSR) Cruise Coordination Database and assistance provided where requested to facilitate permissions with respect to MSR activities within member country EEZs. Testing of the database commenced with input of Fiji cruise data.



Maintenance and Calibration Sea Frame Station, Manus Island, Papua New Guinea.



The Marzone tool has been modified for use in the Pacific to determine relevant maritime boundaries based on UNCLOS guidelines.

SOPAC actively contributed to the organisation of, and participated in, the Pacific Islands Regional Ocean Forum (PIROF), held in February 2004 in Suva and subsequently with the CROP Marine Sector Working Group in finalising a draft Pacific Island Regional Ocean Policy – Integrated Strategic Action Plan, (PIROP-ISA) the mechanism to implement the Pacific Islands Regional Ocean Policy.

The integrated policy action framework for PIROP will, in the years to come, guide SOPAC and other CROP agency activities in the oceans sector, in particular supporting the development and implementation of ocean policies at the national level.

SOPAC coordinated an AOSIS workshop in May 2004 which provided avenues for dissemination of the policy and the draft ISA to other SIDS members and the Ocean Policy and ISA have been integrated into the revision of the Ocean & Islands Programme. Work on the draft PIROP-ISA has been noted by the Pacific Leaders at the 35th Pacific Islands Forum Meeting in Apia and finalisation of the draft ISA is aimed for tabling at the upcoming BPoA+10 meeting in Mauritius.

WHAT'S IT WORTH ?

Counting the costs and benefits of projects implemented to assist the black pearl industry in the Cook Islands

In November 2000 the black pearl industry in Manihiki Lagoon in the Northern Cook Islands was severely affected by an oyster disease, which, along with low international pearl prices, caused a steep decline in pearl export revenue, from NZ\$18.4 million in 2000 to NZ\$2.8 million in 2003.

Overstocking and poor handling of pearl oysters, combined with adverse environmental conditions, were found to be the major causes of the Manihiki disease outbreak in 2000. Scientific research and experience in other pearl farming countries suggest that more sustainable farming practices and lagoon management would have prevented the disease and subsequent decline in the quality and quantity of pearl production.

The Cook Islands Ministry of Marine Resources, with the assistance of SOPAC and other organisations, has implemented various projects in Manihiki, which aim to achieve sustainable development of the black pearl industry and avoid future disease outbreaks. These projects involve diverse activities, including: monitoring the physical and chemical parameters in the lagoon; mapping the lagoon bathymetry and pearl farms; building local capacity in pearl farming and lagoon management skills; monitoring pearl oyster health and stocks, and drawing up a lagoon management plan and code of practice. The SOPAC Ocean and Islands Programme has assisted with monitoring, mapping and capacity building.



Photograph: Berni Aquilina.

The Cook Islands Government and supporting organisations have invested considerable resources in the projects in Manihiki. But will the projects reap economic benefits greater than their costs? Farmers can potentially use the project outputs to make their farming practices more sustainable, and thereby gain significant economic returns.

In 2004 a study was undertaken at SOPAC to evaluate whether the projects implemented in Manihiki are worthwhile investments for the Cook Islands. The study concludes that if the projects are supported by the implementation and enforcement of the draft pearl farming management plan, which regulates oyster stocking densities and farming practices, the Net Present Value of the projects is approximately NZ\$39.8 million. The projects also have additional indirect, secondary and non-monetary benefits. In this future scenario, pearl revenue declines and the projects fail to reap their large potential economic benefits. Under these assumptions, the projects will have a negative Net Present Value of approximately NZ\$2.4 million. Many of the indirect, secondary and non-monetary benefits will also be lost.

If the management plan is not implemented and enforced, however, incentives remain for resource users to stock the lagoon at unsustainable oyster densities and employ poor farming practices.

On the basis of these findings the study strongly recommends that the draft Manihiki pearl farming lagoon management plan be implemented as soon as possible, to guarantee that the projects effectively reap their substantial potential economic rewards for the Cook Islands. Without an enforced system of rules and regulations, incentives for individual farmers to overexploit the lagoon will lead to reduced profits for all, repeated disease outbreaks and could eventually cause the demise of the Manihiki pearl industry.



The overall goal of the Community Lifelines Programme (CLP) is to "Improve community access to energy, water and sanitation, and information and communication technologies for sustainable livelihoods". This is carried out through its three programme components:

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

In addition the CLP continued to work on the effective integration of the three very distinct utility focused sectors of energy, water, and information and communication technologies.

Within the CLP, adopted regional policies and guidelines continued to be pivotal in guiding the work of the programme both within the region and in addressing global agendas, for example, the multi-year programme of work of the Commission of Sustainable Development (CSD) that focuses on water, sanitation and human settlements in 2004-2005; the Water for Life Decade (2005-2015); and Energy for Sustainable Development, industrial development, air-pollution/atmosphere and climate change in 2006-2007.

Resource Assessment, Development and Management

The quantification of the region's resources remains a critical component in the planning process of the future sustainable development and management of these resources. Recently considerable progress was made in the evaluation of specific resources and also in the provision of training. This, more specifically, included the first phase of national biomass resource assessments in six countries and the development of a second phase; the installation and commissioning of a 20-kW wind turbine inside the Fiji Mineral Resources Department compound within reach of SOPAC, along with the development of training modules to support a post-graduate wind energy education course being offered at USP. Site-specific wave energy monitoring in Fiji and the Cook Islands through the deployment of submerged data loggers to confirm earlier (1987) wave energy measurements, were also undertaken.

Activities in renewable energy included the convening of a pilot training workshop on solar PV project development, contributing to a wind energy workshop at USP, and providing input and contributing to the overall development of a training needs assessment on



Demonstration 20-kW wind turbine installed as part of the development of a wind energy education programme with the University of the South Pacific. The wind turbine was funded jointly by UNEP and the French Government.

renewable energy for the region initiated and funded through ESCAP.

The first year of a three-year hydrological training programme was commenced as part of the Pacific Water Type 2 Partnership Initiative and funded by NZAID along with the continued publication of the Islands Climate Update through NIWA. A funding proposal for the second and third years is currently being finalised with NZAID. Further work is underway on the preparation of other funding proposals for subsequent support to these

two activities along with new proposals in water quality and wastewater management as part of implementing priority components of the Pacific Regional Action Plan on Sustainable Water Management. Also of note was the re-commenced regional programme on water quality



Pacific Islands students receiving instruction in the evaluation and selection of a suitable site for establishing hydrological gauging site. This work is part of a three-year training and capacity building programme in surface and ground water and will assist with ensuring better water resource management.



Official Opening of the Sanitation Park in the Fiji School of Medicine, Tamavua, Fiji on 18th November 2004. The Sanitation Park comprises a variety of dry working models of sanitation facilities considered appropriate for island communities and will be utilised as an educational tool for community members to medical students.

training and database updating following the appointment of a Water Quality Officer as a shared position with the University of the South Pacific – Institute of Applied Sciences [USP-IAS].

World Water Day activities this year were promoted through the provision of assistance for the development of teacher training materials; and water education and awareness in schools was addressed through the development of a board game called "Forceful Flows" to teach about events related to water and disasters.

A significant level of activity within the CLP can be attributed to the strengthening of human resources through capacity building – a particular area being in the use of GIS and Remote Sensing tools to detect and monitor land cover change and the security of water catchments; to undertake biodiversity measurements, topography (slope) analyses, forest function/soil analyses, and human impact analyses. In addition the programme continued to promote the use of ICT applications and tools like GIS and Remote Sensing, through publication of the regional GIS and Remote Sensing Newsletter and via the electronic media.

Asset Management

The appointment of the Water Quality Officer in June 2004 allowed the CLP to re-commence its programme on water asset management including in-country training in Niue and capacity building in water utility laboratories. This also involved the collection of water quality data and management of the database, the editing for publishing of a water quality guidebook, and the development of water quality project proposals for funding.

A collaborative undertaking between the World Health Organisation (WHO), NZAID, Fiji Ministry of Health, Fiji School of Medicine (FSchM) and SOPAC developed and implemented the establishment of a "Sanitation Park Project" with full community involvement. The Sanitation Park contains various models of toilets and wastewater treatment systems, and is aimed at assisting local communities in implementing appropriate human waste disposal technologies. Its location at the FSchM Tamavua Campus is to ensure that the various technologies demonstrated in the Sanitation Park may be replicated in the region through the training of the region's health workers. Three communities namely Keiyasi (Sigatoka), Balevuto (Ba) and Nadelei (Tavua) were selected through pre-project surveys as locations for community training. Training included composting toilet construction in May 2004 for district health workers and community members and also 3 community workshops under the "Healthy Islands Initiative" in the three selected communities. Funding was provided by WHO and NZAID.

Advocacy and Governance within Community Lifelines

During the period, the CLP also participated, and was involved, in the following key activities:

- Participation in the sub-regional review of the 3rd World Water Forum and consultations regarding appropriate input from the region with respect to preparations for the 4th World Water Forum;
- Continued implementation of priority activities within the themes of the Pacific Regional Action Plan on Sustainable Water Management (RAP);
- Continued to implement the Pacific Islands Energy Policy (PIEP), along with coordinating its review, and assisting in the development of National Energy Policies;
- Contributed to the development of the Pacific Islands Energy Policy and Strategic Action Planning Project (PIEPSAP);
- Continued to implement the Pacific Islands Information and Communication Technologies Policy and Strategic Plan (PIIPP) that sets out a framework of guiding principles and policies and recommended activities for future policy development and co-operation by the Pacific Island Countries;
- Continued to facilitate in the Energy and Water Pacific Partnership Initiatives, including the preparation and circulation of a six-monthly newsletter for each of the sectors to keep stakeholders and partners informed of progress and developments;
- Participated in, and contributed to, the Energy, Information and Communication Technology, and Water and Sanitation CROP Working Groups and coordinate the Pacific Energy and Gender Network (PEG);
- Establishment of an Ad-Hoc Working Group on Water and Sanitation within the context of the Water Partnership Initiative;
- Participated through PacInet in the preparatory process for the World Summit on Information Systems (WSIS) to seek and provide opportunities for the development of partnerships, to ensure SOPAC remains current with respect to developments in the information and communication technologies field while ensuring that the profile of the Pacific is maintained; and



Example of a typical "Map Server" configuration used to establish National Information Centres within PICs. The Map Servers are set up at SOPAC prior to shipping and is sufficient to run the ICT functions of the national government of a small island state.

- Chaired the Round Table Meeting on Climate Change, Sea Level Rise, Climate Variability and Extreme Weather Events during the 2003/2004 period and contributed to the preparation, documentation and presentations for the 4th Round Table Meeting on Climate Change, Sea Level Rise, Climate Variability and Extreme Weather Events.

PACIFIC ISLANDS ENERGY POLICY AND STRATEGIC ACTION PLAN

PIEPSAP aims to improve the capacity of Pacific Island Countries (PICs) to develop practical national energy policies, and the strategic action plans to implement the policies toward achieving “available, reliable, affordable, and environmentally sound energy for the sustainable development for all Pacific islanders.” The operational objective of PIEPSAP is to link energy policy and planning with concrete action measured in investment and implementation of work programmes.

Historically, the PIEPSAP Project is an outcome of the World Summit on Sustainable Development that was held in Johannesburg in 2000 where two initiatives were launched: The PICs regional energy sector umbrella initiative, Pacific Islands Energy for Sustainable Development (PIESD) and the European Union Energy Initiative for Poverty Eradication for Sustainable Development (EUEI). In 2003 the Danish Government agreed to fund the PIEPSAP Project under the EU Energy Initiative.

To meet present and future energy needs, countries require energy policies that are in line with overall development goals, contribute to economic growth, and account for the principles of environmental sustainability and social justice. Experiences in SOPAC's cooperation with PICs have shown that for policy to become effective and sustainable it must be linked to practical implementation plans, human resource development and in particular to budgets and financing.

PIEPSAP wants to focus on these linkages and assist PICs not only in developing sound energy policies but also help to ensure that stated policy objectives are followed up by allocation of adequate human and financial resources.

The complex task of energy policy development and energy planning is best addressed by a menu of options that acknowledges the specific situation in each PIC while maintaining and intensifying cooperation and exchange of information at a regional level.

A Preliminary Menu of Options for Possible PIEPSAP Interventions

Type of intervention:	PIEPSAP offers assistance to
Policy Development	Develop, finalize and adopt a national energy policy, a national electrification policy, a rural electrification policy, etc.
Energy Plans	Develop strategies, energy sector action plans and energy chapters of national development strategies
Cross-Sector Integration	Design and implement energy strategies cutting across key economic sectors (agriculture, transport, industry, tourism, health, education, etc.)
Model Legislation	Revise power utility charters, develop and update energy legislation, model legislation for energy service companies (ESCOs), develop legislative authority and responsibilities for national energy agencies, etc.
Institutional Development	Develop more appropriate institutional structures within the public service with clear powers and responsibilities for the energy department.
Tariff Studies	Establish sustainable tariffs and analyze implications of tariffs on low-income consumers, utility's income.
Model Regulations	Develop appropriate regulatory frameworks and enabling environments for commercialized or privatized electric power utilities and energy suppliers.
Financial Incentives	Design and evaluate tax incentives to promote energy efficiency and renewable energies, develop transition models for biofuel introduction.
Model Agreements	Develop Power Purchase and Concession Agreements for independent power production.
Guidelines	Develop practical guidelines for environmentally sound operation of energy systems; lending guidelines and purchasing models for energy equipment, etc.
Case Studies	Execute case studies based on issues such as national ownership of petroleum storage; import restrictions on energy intensive equipment, fuel quality management and supply cost to remote outer islands.
Subsidy Studies	Determine the actual cost and subsidies for rural electrification depending on location and technology.
Investment Plans and Partnerships	Access sources for energy sector investments and concessionary finance, establish partnerships, and develop project pipelines.

The Community Risk Programme (CRP) provides a range of capacity building support to SOPAC member countries through its three programme components:

1. Strengthening Resilience to Disasters;
2. Mitigating the Effects of Hazards; and
3. Mainstreaming Disaster Risk Management.

The following narrative provides highlights of activities undertaken during 2004, which have been supporting the successful delivery of the programme outputs.

Strengthening Resilience to Disasters

The need to continue the process of strengthening community resilience was once again highlighted by a number of disasters that impacted the region during the past 12 months. The major one being Tropical Cyclone *Heta*, which caused severe damage to a number of islands of Polynesia and in particular the island of Niue which bore the brunt of its category 5 force in early January. These disasters highlight the extreme levels of vulnerability of the Pacific Small Island Developing States (SIDS) as well as the fragile status of the national disaster management arrangements.

The apparent increase in the regularity of extreme weather-related hazards in the region has reinforced the urgent need for improved early warning systems, increased levels of public awareness, and the development of improved national preparedness response and recovery capacities.

The support of existing partnerships and the establishment of a number of new alliances have allowed the programme to continue to provide cost-effective solutions that assist the national capacity building process of our member countries particularly in the key areas of institutional strengthening and training.

Of particular significance was the signing of a memorandum of understanding with The Asia Foundation (TAF)/Office of US Foreign Disaster Assistance (OFDA). This is a regional organisation/programme with its headquarters in San Francisco and its Pacific office recently co-located within the Community Risk Programme. TAF/OFDA is one of the leading organisations in the region responsible for developing, adapting and delivering disaster risk management training to strengthen national capacity.

TAF/OFDA works closely with other organisations such as Emergency Management Australia (EMA) and more recently TAF/OFDA and SOPAC along with the UN Office for the Coordination of Humanitarian Affairs (OCHA) and the International Federation of Red Cross and Red

Crescent Societies (IFRC) formed the Pacific Emergency Management Training Advisory Group (PEMTAG), a group dedicated to better coordinating their disaster management training efforts in the region. The PEMTAG Secretariat has now been established at SOPAC and the first Pacific scholarships for graduate certificates in Disaster Management offered by Swinburne University of Technology in Australia were made available to the National Disaster Management Offices (NDMO) in Tonga and Vanuatu. Further scholarship support is planned for Fiji, Niue and Tuvalu.

The process of strengthening the National Disaster Management Planning Arrangements, including the role of the NDMO, continued with the active support and contribution of both Emergency Management Australia and the New Zealand Ministry of Civil Defence and



Niue hospital destroyed for the second time.



Participants at the TAF/OFDA training courses held in Honiara in September.

Emergency Management. Reviews were conducted in Fiji, Vanuatu, Tuvalu and Niue and strategic action plans agreed by governments for improvements to be made. The New Zealand Ministry of Civil Defence and Emergency Management is also preparing a regional guideline to assist national disaster management planning in member countries.

The partnership with the Australasian Fire Authorities Council has allowed assessments to be conducted of the emergency preparedness capabilities in Papua New Guinea, Vanuatu and Samoa and long-term institutional support plans are now in place for fire services in Fiji and Tonga.

Emergency communication equipment was provided by EMA to Vanuatu and Tuvalu to improve the links between

the NDMO and outer islands; and the capacity of the National Emergency Operations Centre (EOC) in Niue has been strengthened.

As in previous years the CRP worked in partnership with the International Strategy for Disaster Reduction (ISDR) Secretariat in Geneva to actively support public awareness programmes and this year provided funds to Vanuatu.

Mitigating the Effects of Hazards

The successful completion of the Environmental Vulnerability Index (EVI) Project has been the main achievement for 2004 with the results to be presented to global meetings in Mauritius and Kobe in early 2005. This Pacific regional initiative began in 1998 in response to a global call in the 1994 Barbados Programme of Action (BPoA) for the sustainable development of Small Island Developing States (SIDS) for the development of a composite vulnerability index that addressed both ecological and economic concerns.

The EVI captures environmental vulnerability of SIDS as outlined in the BPoA and emphasises their ecological fragility. The panel of experts that independently reviewed the Environmental Vulnerability Index (Think Tank II, 4-6 October 2004) stated that the EVI is sufficiently well developed to begin national implementation. The experts also suggested that countries should be classified into the following relative vulnerability categories – extremely vulnerable, highly vulnerable, vulnerable, at risk, and resilient. It is recommended that developing countries in the first two categories – extremely and highly vulnerable – are likely to require special assistance to manage their vulnerability and build resilience.

In taking the first step towards national implementation, the EVI was presented to a Pacific EVI Capacity Strengthening Workshop (18-20 October 2004). Participants were exposed to the EVI, its concept, mechanics and how scores are generated. The knowledge gained through the workshop will enable country representatives to provide their countries with detailed explanations on the need for environmental management information, the conceptual mechanics and overall benefits of the EVI and its application. In the long term the EVI is expected to help countries prioritise and direct actions in managing vulnerability, and towards sustainability. The launch of the global EVI at the Mauritius International Meeting – the 10-year review of the BPoA in January 2005 will see the completion of this Pacific project.



MFESB/SOPAC team review the progress of the Samoa Fire Service.



Regional NDMOs attend a leadership development programme at the East West Centre in October.



Debris brought by flash floods in Navua, Fiji.

Following the impact of cyclone *Heta* on Niue in January 2004 a SOPAC team conducted a post-disaster assessment and, in partnership with the Pacific Disaster Center (PDC), developed a visualisation model that replicated the effects of the wave action during the disaster. The lessons learned from this can assist the Niue recovery planning process.

Mainstreaming Disaster Risk Management

In recognition of its contribution to strengthening disaster risk management capacity building in the region, SOPAC was awarded a Certificate of Merit at the United Nations Sasakawa Awards held in Geneva in October.

The CRP High-Level Advocacy Team led by Dr Langi Kavaliku continued to meet with national government representatives to promote the adoption of a whole-of-government approach to disaster risk management and during 2004 visited the Cook Islands. The team has also been actively involved in the review of the regional initiatives in support of the implementation of the 1994 Yokohama Strategy and Plan of Action and the preparations for the Second World Conference on Disaster Reduction to be held in Kobe, Japan in January 2005.

To assist with the implementation of the Comprehensive Hazard And Risk Management (CHARM), a national implementation manual is being developed, which will

be introduced through CHARM workshops in member countries. Through its partnership with the Pacific Disaster Center the CRP is also developing a whole-of-government integrated risk reduction framework, which will greatly assist national development planning in member countries.

To support the mainstreaming of disaster risk management, a new disaster risk management training module was developed and this will be included as a component of the TAF/OFDA Introduction to Disaster Management Course.

Under the provisions of the MOU that exists between SOPAC, the East-West Center and the Pacific Disaster Center, a Leadership Seminar was conducted for Pacific Island Disaster Managers in Honolulu. This exposed a number of the regional NDMOs to a range of leadership and managerial skills as well as introducing them to new risk reduction tools and technologies that will assist their national disaster risk management planning.



Participants at the EVI regional workshop.



Atu Kaloumaira, SOPAC's Disaster Mitigation Adviser, receiving the Sasakawa Award on behalf of the SOPAC in Geneva during the World Disaster Reduction Day in October.

TSUNAMI RISK AWARENESS IN PACIFIC ISLAND COUNTRIES

Tsunamis can have a major impact on Pacific Island Countries. Tsunami events in Papua New Guinea (1998, Aitape, magnitude 7.1, 2,200 deaths) and Vanuatu (1999, Port Vila, magnitude 7.3, 5 deaths) demonstrate the potential for life loss and destruction by these hazards.

To increase the awareness and understanding of the potential risks from tsunamis, SOPAC in partnership with UNESCO/Intergovernmental Oceanographic Commission and its International Tsunami Information Center (UNESCO/IOC-ITIC) conducted a South Pacific Tsunami Awareness Workshop in Suva, Fiji in July. The workshop brought together technical experts and regional disaster managers from American Samoa, Cook Islands, Fiji, Papua New Guinea, Solomon Islands, Tonga and Vanuatu.

Follow-up presentation and discussions also took place during the STAR session at the SOPAC Council Meeting in Fiji in September. A number of activities have been identified to increase the awareness of the Tsunami hazard in the region including the development of a Tsunami Information Kit to assist with the strengthening of national public awareness programmes.



Pacific prepares for the second world conference on disaster reduction

SOPAC is mandated by the Pacific Forum Leaders to take the lead, amongst CROP agencies, on issues relating to disaster management or as it is now more generally referred to as disaster risk reduction. SOPAC is also the regional representative on the United Nations International Strategy for Disaster Reduction (ISDR) Taskforce. As part of fulfilling both these roles, the Community Risk Programme (CRP) coordinated the regional contributions towards the preparations for the Second World Conference on Disaster Reduction to be held in Kobe, Japan from 18 to 22 January 2005. The activities that the CRP coordinated included regional and international initiatives, which were made possible through the financial support of both Australia and New Zealand.

The World Conference in Kobe has been described as a milestone event to increase the international profile of disaster risk reduction and to promote its integration into development planning and practice. Our objective in coordinating the Pacific preparations for Kobe is to ensure that not only in Kobe is there international visibility of the unique level of vulnerability of the Pacific Small Island Developing States (SIDS), but also to ensure that this reality is appropriately reflected in the Kobe outcomes document. Fulfilling this objective will then provide a platform for action in the years ahead.



Since January 2004 the CRP has coordinated the following regional activities and consultations to assist the Pacific preparations for Kobe:

1. Conducted a country-based review of the initiatives that supported the implementation of the 1994 Yokohama Strategy and Plan of Action and identified the lessons learned through broad stakeholder consultations;
2. Coordinated the attendance of Pacific delegations to the First and Second ISDR Preparatory Committee Meetings in Geneva; and
3. Facilitated a regional stakeholders workshop and developed a Draft Pacific Regional Position Paper for the Kobe Conference

The outcomes of these activities are:

- An increased global awareness of the particular needs of the Pacific SIDS,
- An agreed separate regional session at Kobe for SIDS which the Pacific has agreed to take the lead on together with AOSIS States and the ISDR Secretariat; and
- The development of a draft framework for a Regional Action Plan for Disaster Risk Reduction 2005-2015 which will be taken to the 12th Pacific Regional Disaster Managers Meeting in Papua New Guinea in June 2005.

Reducing Vulnerability of Pacific ACP States

The highlights of the SOPAC/EU Project activities during the past year display intrinsic linkages within all three of SOPAC's Programme areas. The highlights were:

Ocean & Islands Programme

The major activities and tasks of the SOPAC/EU Project that matrix within the OIP are primarily encompassed within the Project's Key Result Area 1: *Sustainable development of coastal zones, in particular through identifying alternative sources of aggregates*. These activities link with OIP's component – Resource Use Solutions.

- Marine swath mapping surveys provide data and information not accessible to SOPAC members and partners before. This information is vital to coastal development planning and sustainable management of coastal zones and its resources. Tonga and Samoa are the two additional countries that have been completed, and Tuvalu is currently underway. The combined cost of these three operations was approximately F\$250,000 for provision of the survey vessel charter services alone.
- Associated offshore and onshore aggregate surveys were initiated in Fiji, Tonga, Samoa, Solomon Islands and Vanuatu. Identifying marine aggregate resources that represent economically viable alternatives to deplete beach sand or environmentally-damaging dredging.

Community Lifelines Programme

The major activities and tasks of the SOPAC/EU Project that matrix within the CLP are primarily encompassed within two of the Project's key result areas, namely Key Result Area 2: *Improved planning practices installed for safe and adequate water supplies and sanitation systems* and Key Result Area 4: *ISM infrastructure established and in use in each country*. Both of these result areas with all three of the CLP components, – Resource Assessment, Development & Management; Asset Management; and Community Lifelines Governance & Advocacy.

- With respect to risks to yield and raw water quality, reconnaissance investigations were undertaken at groundwater wellfields supplying public water supplies in Tonga (Nuku'alofa), Solomon Islands (Honiara and Gizo), and Vanuatu (Port Vila – Tagabe catchment). In all cases it is apparent that the security of vulnerable

water resources can be improved by controlling land use practices through improved development planning within clearly designated source protection zones. Greater resilience to pollution impacts may be anticipated, improving the safety and adequacy of the critical public water supply sources available to the principal centres of population.



Mr Donn Tolia (right), SOPAC National Representative for Solomon Islands, assisting the EDF8 Project team with beach profiling at Chea village, Marovo Lagoon, New Georgia.

- MapServers have been successfully installed in five countries (Tonga, Fiji, Kiribati, Vanuatu and Papua New Guinea), representing deployment of computer hardware totalling some F\$120,000 in value. A significant number of complementary GIS training courses are underway to build in-country capacity to fully utilise these tools.

Community Risk Programme

The major activities and tasks of the SOPAC/EU Project that matrix with the CRP are primarily encompassed within the Project's Key Result 3: *Implement comprehensive hazard and risk management tools within the framework of an Integrated Holistic Approach for Sustainable Development (Island Systems Management)*. This result area links with CRP's component – Mitigating the Effects of Hazards.

- The project risk assessment team was in Niue at the end April 2004 to assess the wave and wind impact of TC *Heta* on the built environment and document eyewitness accounts of this extreme cyclonic event. The outcomes of the assessment are being incorporated into a 3-D numerical model of the wave

impacts on the devastated capital of Alofi. The model will assist in reducing future vulnerability by helping to identify the most hazardous onshore zones at greatest risk from such extreme tropical cyclones and therefore provide advice on safer locations to rebuild.

- The model can be a useful planning tool to assess potential hazards and risk of proposed development sites to tropical cyclones, thus address the reduction of vulnerability of PICs to this type of extreme event.

Cross-cutting issues

A number of major activities and tasks completed within the multi-disciplinary regional objectives and remit of the SOPAC/EU Project are clearly cross-cutting with respect to all three of SOPAC's Programme Areas. These issues are most easily encompassed under the Project's Key Result Area 5: *Strengthening the Capacity of Pacific ACP States*. All Project specialists, advisers and support staff positions are involved to a greater or lesser extent in the provision of these services. The following were primary activities in 2004:

- A second round of national multi-stakeholder consultations was completed in all eight EDF8 countries and country work plans endorsed. Additional, well-attended meetings involving detailed consultations with provincial- and community-level stakeholders, were also separately completed in the Navua River and Sigatoka River catchments in Fiji.
- Numerous in-country training courses to build local capacity in RS/GIS and Mapserver applications were completed in Fiji, Kiribati, Vanuatu, Solomon Islands and Papua New Guinea; and IKONOS satellite imagery for Project in-country target areas were purchased, or are on order, for Kiribati, Solomon Islands and Niue.
- In-country interns were successfully identified and appointed within six of the EDF8 nations, along with a SOPAC Project Intern.

Further information on the SOPAC-EU Project and details of in-country work programmes and selected Project study sites can be obtained from the Secretariat, or by accessing the SOPAC-EU Project Website: <http://map.sopac.org/tiki/tiki-index.php>

EUROPEAN UNION EXTENDS PACIFIC COVERAGE OF VULNERABILITY REDUCTION PROJECT

The SOPAC-based regional project funded by the European Union, to reduce the vulnerability of Pacific Island countries to natural hazards, was extended in 2004 to another six Pacific Island countries.

A financing agreement worth Euro 2.6 million (FJ\$5.7 million) for the extension was signed on the afternoon of Wednesday, 11 February 2004, by the Head of the European Delegation for the Pacific, Mr Frans Baan and the Deputy Secretary General of the Pacific Island Forum Secretariat. Mr Iosefa Maiava signed in his capacity as Deputy Regional Authorising Officer for the European Development Fund regional programme.

This takes total funding for the Project to Euro 9.6 million (FJ\$21 million).

The also takes the total number of Pacific Island states to benefit from the EU Project to fourteen. These are namely:

Cook Islands, Federated States of Micronesia, Republic of the Marshall Islands, Nauru, Niue and Palau (under EDF9) joining the eight original recipients of the scheme under EDF8 – Fiji, Kiribati, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu.



Appendix 1: SUMMARY OF 2004 FUNDING BY PROGRAMME

ANTICIPATED SOURCE OF FUNDS	GRAND TOTAL	TOTAL OCEAN & ISLANDS PROGRAMME	TOTAL COMMUNITY LIFELINES PROGRAMME	TOTAL COMMUNITY RISK PROGRAMME	TOTAL CORPORATE SERVICES	TOTAL DIRECTORATE
A: DONOR FUNDING						
ACIAR	5,000		5,000			
Australia Marine Science & Technology	145, 547	145, 547				
Australia-Annual Grant	1,561,356	883,055	80,520	597,781		
Australia-Special Grant	172,163	125,651		46,512		
BOM Australia	11,628	11,628				
CFTC	295,200					
CTA	66,667		66,667			
Danish/EU	329,870		329,870			
EMA	143,256			143,256		
ESCAP	10,000		10,000			
European Union EDF 8	4,097,945	1,238,835	1,779,260	908,029	171,822	
Fiji	18,000	18,000				
FSM	32,000	32,000				
New Zealand-Annual Grant	805,175	63,790	460,341	159,868	121,176	
New Zealand-Special Grant	529,097		212,255	316,842		
OFDA	50,374			50,374		
Taiwan (ROC)	132,037	17,776	114,260			
UNDESA	300,000		150,000	150,000		
UNESCO-IOC	67,358	67,358				
UNEP	179,070	179,070	79,070	100,000		
United Kingdom (ODI)	113,500	113,500				
United Kingdom/DFID	95,780		95,780			
VARIOUS	42,060					42,060
TOTAL DONOR FUNDING	9,203,082	3,012,340	3,383,023	2,472,660	292,998	42,060
<u>B: TOTAL REGULAR BUDGET</u> (principally membership contributions)	2,097,141	36,500	208,281	0	1,287,918	564,442
TOTAL 2004 REVISED BUDGET	11,300,223	3,048,840	3,591,304	2,472,660	1,580,916	606,502
TOTAL 2005 APPROVED BUDGET	14,168,775	4,119,108	5,247,191	2,379,709	1,828,067	594,700

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- 1 General Information (December 2002).
- 2 Swath Mapping (May 2003).
- 3 Introduction to Island Systems Management (September 2003).
- 4 Remote Sensing and GIS (December 2003)
- 5 Resource Information Centre (December 2003)
- 6 Open GIS Data Sharing (December 2003).

BATHYMETRIC MAP SERIES

- 1:25 000 Eastern Majuro Multibeam Bathymetry Map (Restricted until January 2005)
- 1:3500 Yap Harbour Bathymetry Map (Restricted until January 2005)

JOINT CONTRIBUTION REPORT

- 175 ADB/SOPAC, December 2003, [Final Proceedings of the] Pacific Consultation on Water in Small Island Countries, Sigatoka, Fiji Islands, 29 July - 3 August 2002 – Pacific Preparatory Meeting for the 3rd World Water Forum, 16-23 March 2003, Kyoto, Japan. SOPAC Joint Contribution 175.

RESTRICTED CIRCULATION REPORTS

Data Release Reports

- 11 Smith, R., 2003, Manihiki and Penrhyn Atoll Oceanographic Monitoring Buoys – Monthly Data Report No.1 – December 2003. [RESTRICTED]
- 12 Smith, R., 2004, Manihiki and Penrhyn Atoll Oceanographic Monitoring Buoys – Monthly Data Report No.2 – January 2004. [RESTRICTED]
- 13 Smith, R., 2004, Manihiki and Penrhyn Atoll Oceanographic Monitoring Buoys – Monthly Data Report No.3 – February 2004. [RESTRICTED]
- 14 Smith, R., 2004, Manihiki and Penrhyn Atoll Oceanographic Monitoring Buoys – Monthly Data Report No.4 – March 2004. [RESTRICTED]
- 15 Smith, R., 2004, Manihiki and Penrhyn Atoll Oceanographic Monitoring Buoys – Monthly Data Report No.5 – April 2004. [RESTRICTED]
- 16 Smith, R., 2004, Manihiki and Penrhyn Atoll Oceanographic Monitoring Buoys – Monthly Data Report No.6 – May 2004. [RESTRICTED]

Trip reports

- 30 Trip reports (current reporting period)
- 20 Trip reports (from backlog)

Appendix 3: SECRETARIAT STAFF LIST (as at September 2004)

POSITION	NAME	COUNTRY OF ORIGIN	DATE JOINED SOPAC	CONTRACT START	CONTRACT END
DIRECTORATE					
Director	Cristelle Pratt	New Zealand	May 2000	Feb 2004	Feb 2007
Deputy Director	Russell Howorth	New Zealand	Oct 1986	Mar 2002	Mar 2005
Executive Assistant	Litia Waradi	Fiji	Apr 1989	Jan 2004	Dec 2006
Executive Planning Officer	Kakala Vave	Fiji	May 2003	May 2004	May 2005
OCEAN & ISLANDS PROGRAMME					
Manager Ocean & Islands	Bhaskar Rao	Fiji	May 2004	May 2004	May 2007
Senior Adviser – Physical Oceanography	Jens Kruger	United Kingdom	Sept 2004	Sept 2004	Sept 2007
Senior Adviser – Resource Economist	Vacant				
Senior Adviser – Marine Geophysics	Robert Smith	Australia	May 1988	July 2004	July 2007
Senior Adviser – Aggregates	Akuila Tawake	Fiji	Oct 2003	Oct 2003	Oct 2006
Senior Adviser – Geoscience Training	Russell Maharaj	Trinidad & Tobago	Nov 2001	May 2004	May 2005
Senior Adviser – Marine Geoscience	Vacant				
Adviser – Technical (Electronics)	Simon Young	Fiji	Jan 1993	Jan 2002	Jan 2005
PI-GOOS Coordinator	Sarah Grimes	Australia	Aug 2004	Aug 2004	Aug 2005
Adviser Sustainable Development	Netatua Prescott	Tonga	Aug 2004	Aug 2004	Aug 2007
Adviser Aggregates & Coastal Process	Arthur Webb	United Kingdom	Jul 2004	Jul 2004	Jul 2007
Project Officer 1 – Technical (Marine)	Quan Chung	Fiji	Jan 2003	Jan 2003	Jan 2006
Project Officer 2 – Technical (Surveying)	Andrick Lal	Fiji	Aug 2001	Aug 2004	Aug 2007
Project Officer 3 – Technical (Geoscience)	Sekove Motuiwaca	Fiji	Apr 1980	Jan 2004	Dec 2006
Project Officer 4 – Technical (Electronics)	Peni Musunamasi	Fiji	Jun 1989	Jan 2004	Dec 2006
Project Officer 5 – Technical (Mechanics)	Setareki Ratu	Fiji	Oct 1986	Jan 2004	Dec 2006
Adviser – Resource Economics	Emily McKenzie	United Kingdom	Oct 2003	May 2003	May 2004
Programme Assistant – Ocean & Islands	Frances Dobui	Fiji	Oct 2003	Oct 2003	Oct 2006
Project Officer 6 – Maritime Boundaries	Emily Artack	Fiji	May 2004	Oct 2003	Oct 2005
Project Officer 7 – Geoscience Training	Arti Naidu	Fiji	May 2002	May 2004	May 2005
COMMUNITY LIFELINES PROGRAMME					
Manager Community Lifelines	Paul Fairbairn	New Zealand	Jan 1998	Sep 2003	Sep 2006
Senior Adviser – ICT	Leslie Allinson	Australia	Nov 1992	Nov 1998	Nov 2004
Senior Adviser EU – Team Leader – Water Resources Specialist	Stephen Booth	United Kingdom	Feb 2003	Feb 2003	Feb 2006
Senior Adviser EU – GIS and Remote Sensing	Wolf Forstreuter	Germany	Jan 1999	Jan 2003	Jan 2006
Senior Adviser EU – ICT Specialist	Franck Martin	France	Sept 1993	Jan 2003	Jan 2006
Adviser – Water / Hydrogeology	Marc Overmars	Netherlands	Apr 2000	Sept 2003	Sept 2004
Adviser – Energy	Anare Matakiviti	Fiji	Feb 2000	Feb 2003	Feb 2006
Adviser – Water Resources, Supply & Sanitation	Vacant				
UN Associate Expert	Jan Cloin	Netherlands	Nov 2003	Nov 2003	Nov 2006
Project Manager – PIESAP Project	Gerhard Zieroth	Germany	Aug 2004	Aug 2004	Aug 2007
Water Engineer	Sarah Davies	Australia	June 2004	June 2004	June 2006
Project Officer 8 – Energy	Rupeni Mario	Fiji	Oct 1998	Mar 2004	Mar 2005
Project Officer 9 – ICT Network and Security	Graeme Frost	Fiji	Mar 1992	Jan 2004	Dec 2006
Project Officer 10 – GIS & Remote Sensing (SOPAC/EU)	Vacant				
Programme Assistant – Community Lifelines	Arieta Navatoga	Fiji	Oct 2003	Oct 2003	Oct 2006
Assistant Project Officer 1 – Water & Sanitation	Vacant				
Project Officer 11 – Water & Sanitation	Rhonda Bower	Fiji	Nov 1998	Feb 2004	Feb 2005
Project Officer 12 – Water Sanitation	Alena lawedrau	Fiji	May 2003	May 2004	May 2005
Assistant Project Officer 13 – Energy	Yogita Bhikabhai	Fiji	Jan 2002	Jan 2004	Jan 2005
Assistant Project Officer 14 – Water Quality	Sarabjeet Singh	Fiji	June 2004	June 2004	June 2005
Project Officer 15 – GIS/RS ICT	Elizabeth Iomani	Fiji	Feb 2004	Feb 2004	Feb 2005

STAFF LIST ... continued

POSITION	NAME	COUNTRY OF ORIGIN	DATE JOINED SOPAC	CONTRACT START	CONTRACT END
COMMUNITY LIFELINES PROGRAMME ... continued					
Project Officer 16 – GIS/RS ICT	Joy Papao	Solomon Islands	June 2004	June 2004	June 2005
EU Intern – Fiji	Vilisi Tokalauvere	Fiji	Feb 2004	Feb 2004	Feb 2005
Energy Attachment	Alex Whippy	Fiji	Jan 2004	Jan 2004	Dec 2004
ICT Attachment	Daryl Woo	Fiji	Oct 2003	Oct 2003	Dec 2004
COMMUNITY RISK PROGRAMME					
Manager Community Risk	Alan Mearns	Australia	June 2000	June 2003	June 2006
Senior Adviser – Risk	Michael Bonte	Germany	June 2003	June 2003	June 2006
Disaster Mitigation Adviser	Atu Kaloumaira	Fiji	Dec 2000	Dec 2003	Dec 2006
Programme Director – PDRMP	Kathryn Hawley	United States of America	Feb 2001	Feb 2001	Feb 2004
Adviser – Hazards Assessment	Litea Biukoto	Fiji	Apr 2003	Apr 2003	Sep 2003
UN Associate Expert	Noud Leenders	Germany	Aug 2000	Jan 2003	Jan 2004
Project Officer 17 – PDRMP	Monika Swamy	Fiji	Aug 2004	Aug 2004	Aug 2007
Project Officer 18 – PENTAG	Tukatara Tangi	Cook Islands	Sept 2004	Sept 2004	Sept 2007
Research and Planning Officer	Kata Duaibe	Fiji	Apr 2004	Apr 2004	Apr 2005
Programme Assistant – Community Risk	Paulina Ravouvou	Fiji	Aug 2004	Aug 2004	Apr 2005
Assistant Project Officer 19	Jonathan Mitchell	Fiji	Dec 2002	Feb 2003	Feb 2006
CORPORATE SERVICES					
Manager Corporate Services	Mohinish Kumar	Fiji	Mar 1998	Sept 2003	Sept 2006
Adviser – Publications	Mereisini (Lala) Bukarau	Fiji	Nov 1985	Sept 2003	Sept 2006
Accountant	Makereta Kaurasi	Fiji	Apr 1998	Apr 2004	Apr 2007
Conference & Travel Officer	Laisa Baravilala-Baosa	Fiji	Jul 1987	May 2003	May 2006
Administration Officer	Karen Datta	Australia	July 2001	July 2001	July 2004
Project Officer 20 – Library	Dorene Naidu	Fiji	Sept 2004	Sept 2004	Sept 2007
Finance Services Officer – I	James Ram	Fiji	May 2000	Jan 2003	Jan 2006
Assistant Administration Officer – SOPAC/EU Project	Subha Ram	Fiji	Sept 2004	Jan 2003	Jan 2006
Project Officer 21 – System Administrator	Sakaio Manoa	Fiji	Jan 2004	Jan 2004	Jan 2006
Project Officer II – Publish./Graphic Arts	Reuben Vulawalu	Fiji	Apr 2001	Mar 2004	Mar 2007
Receptionist/Clerk	Unaisi Bainiloga	Fiji	Feb 1987	Jan 2004	Dec 2006
Driver/Clerk	Enele Gaunavou	Fiji	Jul 1988	Jan 2004	Dec 2006
Assistant Project Officer 22 – Web Developer	Vacant				
Assistant Project Officer 23 – ICT Training	Avinash Prasad	Fiji	June 1999	Jan 2004	Dec 2006
Office Assistant/Cleaner	Salestino Niu Daurewa	Fiji	Sep 1987	Jan 2004	Dec 2006
Assistant Finance Officer III	Emi Nofaga	Fiji	Aug 2002	Mar 2004	Mar 2005
Security Officer	Cama Temo	Fiji	Sep 2002	Jan 2004	Dec 2004
Security Officer	Waitisoni Tuberi	Fiji	Sep 2002	Jan 2004	Dec 2004
Assistant Project Officer IV – Publications/Library	Elenoa Rokodi	Fiji	Feb 2003	Feb 2004	Feb 2005
Carpenter	Nand Kumar	Fiji	June 1998	Jan 2005	Jan 2006
Assistant Carpenter	Ajay Chand	Fiji	Dec 2000	Jan 2005	Jan 2006
Gardner	Are Waione	Fiji	Mar 1996	Jan 2005	Jan 2006

Appendix 4: LIST OF ACRONYMS

AOSIS	Alliance of Small Island States
BPoA+10	Barbados Programme of Action for Small Island Developing States
CESMG	Certificate in Earth Science and Marine Geology
CHARM	Comprehensive Hazard and Risk Management
CLP	Community Lifelines Programme
CROP	Committee of Regional Organisations in the Pacific
CRP	Community Risk Programme
CSD	Commission of Sustainable Development
EEZ	Exclusive Economic Zone
EMA	Emergency Management Australia
EOC	Emergency Operations Centre
ESCAP	Economics and Social Commission for Asia and the Pacific
ESCOs	Energy Service Companies
EU	European Union
EDF8	8th European Development Fund
EVI	Environmental Vulnerability Index
FSchM	Fiji School of Medicine
GIS	Global Information Systems
GPS	GLobal Positioning Systems
ICT	Information Communication Technology
ICU	Island Climate Update
IFRC	International Federation of Red Cross
I-GOOS	Intergovernmental Committee for GOOS
ISA	International Seabed Authority
ISDR	International Strategy for Disaster Reduction
ISM	Islands Systems Management
ISP	Internet Service Provider
MOU	Memorandum of Understanding
MFESB	Melbourne Metropolitan Fire and Emergency Services Board
MSR	Marine Scientific Research
NDMO	National Disaster Management Office
NZAID	New Zealand Agency for International Development
OCHA	UN Office for the Coordination of Humanitarian Affairs
OIP	Ocean & Islands Programme
PacInet	Pacific Inet
PDC	Pacific Disaster Centre
PEG	Pacific Energy and Gender Network
PEMTAG	Pacific Emergency Management Training Advisory Group
PICs	Pacific Island Countries
PIEP	Pacific Islands Energy Policy
PIEPSAP	Pacific Islands Energy Policy and Strategic Action Planning Project
PIIPP	Pacific Islands Information and Communication Technologies Policy and Strategic Plan
PIROF	Pacific Islands Regional Ocean Forum
PIROP	Pacific Islands Regional Ocean Policy
PIRMBIS	Pacific Islands Regional Maritime Boundaries Project Information Systems
PV	Photovoltaic
RAP	Regional Action Plan
SEAFRAME	Sea Level Fine Resolution Acoustic Measuring Equipment
SIDS	Small Island Developing States
SOPAC	South Pacific Applied Geoscience Commission
SPSLCMP	South Pacific Sea Level and Climate Monitoring Project
TAF/OFDA	The Aisa Foundation/Office of the US Foreign Disaster Assistance
TC	Tropical Cyclone
UNCLOS	United Nations Convention on the Law of the Sea
USP	University of the South Pacific
USP-IAS	University of the South Pacific - Institute of Applied Sciences
UV	Ultra-violet
WHO	World Health Organisation
WSIS	World Summit on the Information Society
WWF	World Water Forum

