

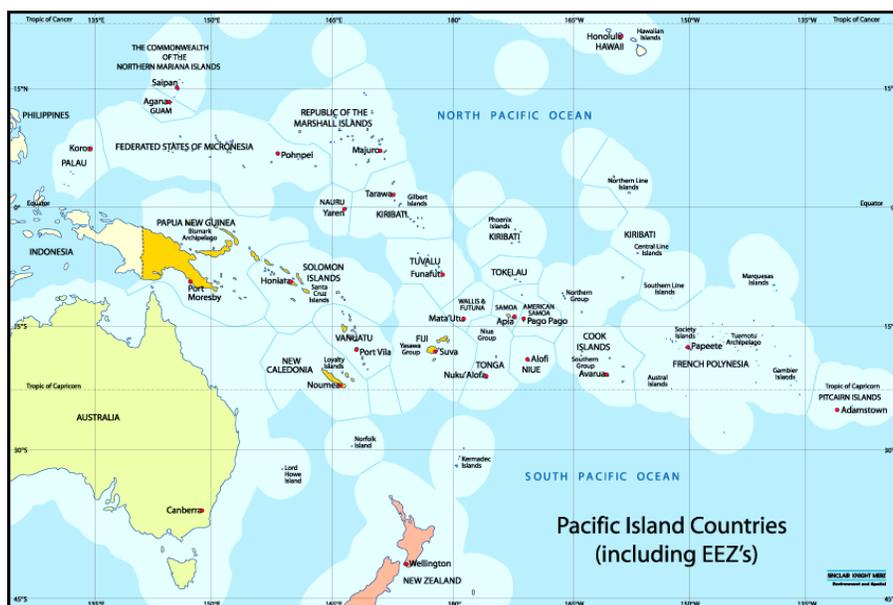
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A Pacific Regional Economics of Climate Change Study: Assessing adaptation needs in Small Island Developing States

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INTRODUCTION ²

The Pacific region comprises a variety of geographically and economically diverse island countries. Apart from the developed countries of Australia and New Zealand, there are twenty-one developing countries, of which fourteen are independent nations and several are territories.



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2 Much of the introduction to the Pacific in this section borrows from Lal et al. (forthcoming).

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There is significant geographic diversity in the region: for example, low-lying atolls (Tokelau, Tuvalu, Kiribati and the Republic of the Marshall Islands), volcanic islands (Papua New Guinea, Samoa and Vanuatu), countries comprising mixtures of both atolls and volcanic islands (Cook Islands) and raised atolls (Niue).

The region comprises some of the physically smallest nations in the world (Nauru, Tokelau, Tuvalu) as well as countries with the world's smallest populations (Niue). The largest developing Pacific island country is Papua New Guinea, with a population of just under six million. The total population of the region, excluding Australia and New Zealand, is ten million. While land areas are relatively small, sea areas are comparatively much larger: Pacific governments have authority over 38.5 million km², of which 98% is ocean. Naturally, Pacific communities rely heavily on maritime resources, and most Pacific island countries are characterized as predominantly coastal societies.

THE PACIFIC AND CLIMATE CHANGE

The Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) identified Small Island Developing States as being among the world's most vulnerable countries to the adverse impacts of climate change. This vulnerability is exacerbated by the countries' geographic characteristics, rapidly growing populations and reliance on limited resources and limited human capacity. Pacific island countries are particularly vulnerable to climate variations and extreme weather events. For example, it is expected that climate change will negatively impact the primary food sources (agriculture, fisheries and forests) and water systems in most Pacific island countries. There is furthermore a perception among regional stakeholders that the severity and incidence of natural disasters have increased. Future climate projections for the region are approximate and bleak.

Given the region's relatively small size and low emissions levels, there is a risk that it will be overlooked in international negotiations concerning climate change. There is therefore a need to increase negotiating power in international fora in order to minimize further damage and support adaptation efforts. Although some *ad hoc* project-based activities have been carried out in the past, no systematic approach has yet been adopted to address climate change challenges in each country. A Pacific Regional Economics of Climate Change Study (RECCS) could therefore fill an important niche by providing regional stakeholders with an evidence-based policy agenda.

The regional agencies and their role in climate change management and adaptation

A range of international, regional and national agencies, as well as individual researchers, undertake climate change activities in the Pacific. For example, national environmental services, development banks and community groups are active in individual, often independent climate change adaptation projects.

An attempt at coordinating regional sustainable development activities on a broad level has been through the establishment of the Council of Regional Organizations in the Pacific (CROP) in 1988. This Council comprises eleven regional, intergovernmental agencies as well as a high-level advisory board of the agency heads (see Box 1). The

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CROP Heads and Working Group mechanism coordinates work programs and policies among the individual CROP agencies, minimizing redundancy and cultivating synergies. Given that much of the agencies' work is interlinking – climate change mitigation and adaptation, which spans the work of several agencies, is a good example of this – the CROP working group mechanism ensures that CROP agencies work cohesively and effectively.

Box 1: CROP Agencies

Forum Fisheries Agency (FFA)
Pacific Islands Development Programme (PIDP)
Secretariat of the Pacific Community (SPC)
Secretariat of the Pacific Regional
Environmental Programme (SPREP)
south-pacific.travel
University of the South Pacific (USP)
Fiji School of Medicine (FSM)
Pacific Islands Forum Secretariat (PIFS)
South Pacific Board for Educational Assessment
(SPBEA)
Pacific Islands Applied Geoscience Commission
(SOPAC)
Pacific Power Authority (PPA)

The Secretariat of the Pacific Regional Environmental Programme (SPREP) coordinates mitigation and adaptation activities in the region guided by the Pacific Islands Framework Action on Climate Change. It manages several adaptation projects: for example, *Pacific Islands Greenhouse Gas Abatement through Renewable Energy, Capacity Building for the Development of Adaptation Measures in Pacific Island Countries and Pacific Ozone Depleting Substances*. In addition, a major *Pacific Adaptation to*

Climate Change project is about to commence implementation managed through SPREP. Further information is available at www.sprep.org.

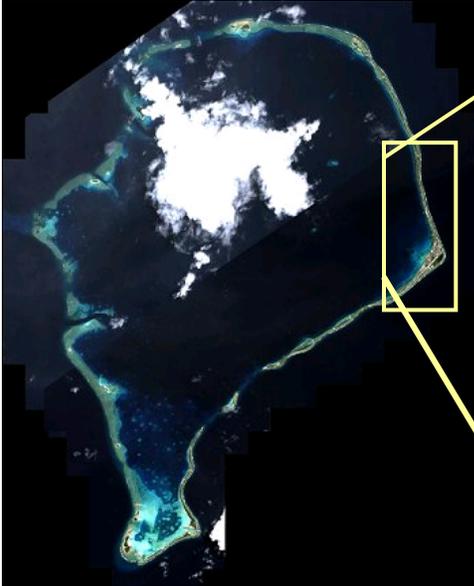
Climate change-related research is also pursued in other CROP agencies, depending on relative technical expertise. The Pacific Islands Applied Geoscience Commission (SOPAC) has been active in the development of a Pacific RECCS for this reason. SOPAC is an interdisciplinary research and policy organization dedicated to sustainable development. Its three work programs – Oceans and Islands, Community Risk and Community Lifelines – conduct research around its remit of non-living resources. In several instances, this comprises research directly related to climate change. For example, SOPAC coordinates the Pacific Islands Global Ocean Observing System and the South Pacific Sea Level and Climate Monitoring Project. In addition, SOPAC's Community Risk Programme works on developing National Action Plans for the improved management of disasters, while the Community Lifelines Programme's work in water and energy has examined the feasibility of alternative fuels. Furthermore information is available at www.sopac.org.

To inform the practicality and scope of a Pacific RECCS, SOPAC has been invited to conduct the Phase 1 Preliminary Assessment. It will work closely with SPREP, the Pacific RECCS lead agency, and other regional and international organizations.

ADAPTATION WORK IN SOPAC, A CASE STUDY: FUNAFUTI, TUVALU

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A case study can immediately demonstrate the interlinking, multidimensional research activities undertaken within SOPAC related to climate change adaptation, and the policy outcomes which have occurred following this research.



Funafuti, Tuvalu: Satellite imagery



Funafuti: From the air

Funafuti, Tuvalu, is a low-lying atoll located approximately halfway between Australia and Hawaii in the central Pacific Ocean. At present, Funafuti's islets are experiencing recurrent flooding. Climate change and illegal hand mining from the foreshore are frequently blamed as the causes of this flooding.

In an effort to address this problem, the Government of Tuvalu requested SOPAC in 2004 to conduct a coastal assessment. This led to further research – particularly around adaptation efforts, such as identifying a sustainable alternative source of aggregates for the construction of seawalls. A multidisciplinary approach was taken: first, coastal erosion and other processes were examined by SOPAC researchers (Webb 2005, Webb 2006). A bathymetry map of Funafuti lagoon was produced (Krüger 2006) and hydrodynamic modeling was performed in order to predict the effects of dredging aggregates from the lagoon (Damlamian 2008). The lagoon's aggregates had been studied previously by SOPAC in terms of their sturdiness for basic construction (Smith et al. 1991). And finally, a cost-benefit analysis was performed which examined the economic feasibility of dredging Funafuti lagoon (Ambroz forthcoming). At present, results have been reported back to Tuvalu stakeholders and there is interest in pursuing international funds to finance the establishment of a dredge project.

This is the latest in a series of interdisciplinary research projects relating to the offshore mining of construction aggregates. In Tarawa, Kiribati, the same series of research work was undertaken and a dredging project in Tarawa lagoon has now been established.



METHODOLOGY FOR A RECCS FEASIBILITY ASSESSMENT

The Pacific RECCS will fill an important gap in providing the first rigorous, comprehensive study for the Pacific. Terms of Reference have been drafted and a Phase 1 Preliminary Assessment is scheduled to commence in April 2009. This assessment will examine how the Stern methodologies should be adapted in light of severe data constraints and the specific needs of the region. Three case studies will be taken from each subregion – Micronesia, Polynesia and Melanesia – in order to ensure that the geological, political, social and economic diversity is captured.

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REFERENCES

Ambroz, A. Forthcoming. An economic feasibility assessment of lagoon dredging in Funafuti, Tuvalu. SOPAC Technical Report ER137, Fiji.

Lal, P., Singh, R., and Holland, P. Forthcoming. Relationship between Natural Disasters and Poverty in Fiji: a Pacific Case Study. SOPAC Technical Report, Fiji.

Damlamian, H. 2008. Hydrodynamic Model of Funafuti: Water Circulation and Applications. EU EDF – SOPAC Project Report 133, Fiji.

Krüger, J. 2008. High-Resolution Bathymetric Survey: Fieldwork undertaken from 19 September to 24 October 2004. EU-SOPAC Project Report 50, Fiji.

Smith, R., Saphore, E. and F. Seneka. 1991. Geophysical survey of lagoon sediments, Funafuti atoll, Tuvalu. SOPAC Preliminary Report 33, Fiji.

Webb, A. 2005. Tuvalu: Technical and Country Mission Report: Assessment of Aggregate Supply, Pond and Lagoon Water Quality & Causeway Construction on Funafuti and Vaitupu Atolls. EU EDF 8/9 – SOPAC Project Report 36, Fiji.

Webb, A. 2006. Tuvalu Technical Report: Coastal Change Analysis Using Multi-Temporal Image Comparisons – Funafuti Atolls. EU EDF 8/9 – SOPAC Project Report 54, Fiji.