

Pacific
Region
Environmental
Strategy
2005–2009

Volume 1: Strategy Document

Asian Development Bank

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CONTENTS

iv	Tables	
v	Figures	
v	Boxes	
vii	Abbreviations	
ix	Foreword	
1	Rationale and Objectives	
3	Introduction	
3	The Pacific Environment	
3	ADB in the Pacific	
4	ADB Operations and Environment Policy	
4	Need for a Pacific Environmental Strategy	
5	Strategy Objectives and Approach	
7	Current Environmental Issues and Challenges	
9	The Pacific and Environmental Challenges	
9	Overview of the Pacific	
13	Defining Characteristics of Pacific Countries	
14	Key Development and Environmental Challenges	
16	Pacific Environmental Issues	
16	Freshwater Resources	
19	Coastal and Marine Resources	
23	Forest Resources	
27	Waste Management and Urbanization	
32	Biodiversity	
38	Energy-Environment Linkages	
41	Climate Change and Variability	
47	Environmental Governance	
53	Emerging Response Strategies	
57	Assessing ADB's Past Environmental Assistance to the Pacific	
59	ADB's Environment-Related Assistance to PDMCs	
61	Lessons Learned from ADB's Experience	
69	Patterns of and Lessons from External Environmental Assistance	
71	Environmental Assistance and Lessons Learned	
71	Assistance from External Agencies other than ADB	
72	The Global Environment Facility	
78	South Pacific Regional Environment Programme	
80	Accomplishments, Constraints, and Lessons Learned	
80	Learning from Areas of Progress	
81	Lessons from Constraints Encountered	
83	Pacific Region Environmental Strategy, 2005–2009	
85	Vision for the Region	
85	Overview	



85	Issues at the Local or Country Level
86	Issues Crossing Local/Country and Regional Levels
86	Issues Crossing Country, Regional, and Global Levels
87	ADB's Role in Improving Pacific Environmental Management
87	Intervention Strategy
87	Framework for ADB Environmental Assistance in the Region
88	Areas for Local/Project-Level Assistance
89	Areas for Assistance at the Subnational Level
91	Areas for Strategic Focus at the National and Sector Levels
92	Areas for Complementary Regional Assistance
94	Implementation Issues and Measuring Progress
94	Targets Set at the WSSD
96	Millennium Development Goals
96	Key Risks and Assumptions of the Strategy
97	References
101	Appendixes
103	Pacific Regional Submission to the WSSD
107	Summaries of Case Studies
127	Human Development-Characteristics of PDMCs
129	High Priority Areas for Action Relating to Forest and Tree Management
131	ADB's Environment-Related Assistance to PDMCs

TABLES

11	1. Geographic Features of PDMCs
11	2. Main Economic Activities in PDMCs
12	3. Human Development and Poverty Indexes for Pacific Island Countries
16	4. Summary of Freshwater Resources and Uses in PDMCs
17	5. Profile of Pacific Populations with Access to Sanitation and Safe Water
20	6. Estimated Annual Value of Fisheries Production for Pacific Island Countries
21	7. Pacific Reefs at Risk
22	8. Maximum Number of Hermatypic (Reef Forming) Coral Species in the Pacific
24	9. Forest Statistics for Selected PDMCs
28	10. Waste Awareness Baseline Survey
29	11. Urban Population and Growth Rates in PDMCs
29	12. Generation of Waste in Selected PDMCs
30	13. Contamination by POPs in Pacific Island Countries
31	14. Waste Collection Charges in Tonga
32	15. Waste Collection and Disposal Charges in Vanuatu
33	16. Biodiversity Indicators in PDMCs and Related Land Use Statistics
35	17. Protection Needs for Ecosystems and Organisms in the Pacific Region
37	18. PDMC Membership in CBD and Compliance with CBD Obligations
37	19. PDMC Membership in the Convention on International Trade in Endangered Species of Wild Fauna and Flora
43	20. PDMCs' Participation in UNFCCC and Kyoto Protocol
45	21. Estimated Vulnerability to Natural Hazards in Selected PDMCs

45	22.	Dates of Submission of First National Communication under UNFCCC
47	23.	Pacific National Environmental Management Organizations
52	24.	Environmental Policy and Planning Exercises of Pacific Island Countries
53	25.	Pacific Country Participation in Multilateral Environmental Agreements
59	26.	Summary of ADB Environment-Related Assistance to PDMCs, 1992–2002
62	27.	Environment-Related Technical Assistance, 1992–2002
64	28.	Environment-Related Grants, 1992–2002
65	29.	Regional Environment-Related Technical Assistance, 2002–2004
66	30.	Environment-Related Lending, 1992–2001
72	31.	Summary of Ongoing External Assistance
73	32.	Ongoing Environment-Oriented External Assistance (Country-Level)
75	33.	Ongoing Environment-Oriented External Assistance (Regional)
79	34.	Pacific Island Countries' Access to the GEF, 1992–2002
79	35.	SPREP Annual Expenditure on Project Implementation

FIGURES

10	1.	Map of the Pacific
50	2.	Expenditures on Regional Environment Programs through South Pacific Regional Environment Programme, 1991–2000
60	3.	Country-Level TAs by Sector
60	4.	Value of Country-Level TAs by Sector
60	5.	Environment-Related RETAs by Sector
61	6.	Value of Environment-Related RETAs by Sector
61	7.	Environment-Related Loans by Sector
61	8.	Value of Environment-Related Loans by Sector
72	9.	Number of Country-Level External Assistance by Sector
72	10.	Value of Country-Level External Assistance by Sector
72	11.	Number of Region-Level External Assistance by Sector
72	12.	Value of Region-Level External Assistance by Sector
80	13.	Major External Agency Contributions to SPREP for Environmental Programs in the Pacific Region

BOXES

25	1.	Forestry Scenarios in Papua New Guinea
34	2.	Threats to Biodiversity and Biodiversity Conservation
38	3.	The Micronesia Conservation Trust
39	4.	The Rarotonga Declaration on Energy for the Sustainable Development of the Pacific Islands
44	5.	Vulnerability and Adaptation
48	6.	National Environmental Management Strategy and Environmental Policy Formulation in Samoa
49	7.	Fiji Islands—Objectives for Environmental Mainstreaming
51	8.	Members of the Council of Regional Organizations in the Pacific
76	9.	Key Issues for Increased Pacific Access to the Global Environment Facility
77	10.	Pacific Islands Strategy for the Global Environment Facility (1995)
78	11.	South Pacific Biodiversity Conservation Programme
95	12.	Millennium Development Goals and Targets

ABBREVIATIONS

ADB	Asian Development Bank
AusAid	Australian Agency for International Development
CBD	Convention on Biological Diversity
CITES	Convention on International Trade in Endangered Species of Wildlife Flora and Fauna
CROP	Council of Regional Organizations in the Pacific
EEZ	exclusive economic zone
EIA	environmental impact assessment
FAO	Food and Agriculture Organization (of the United Nations)
FFA	Forum Fisheries Agency
FSM	Federated States of Micronesia
GDP	gross domestic product
GEF	Global Environment Facility
GHG	greenhouse gas
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit (German Agency for Technical Cooperation)
HIV/AIDS	Human immunodeficiency virus/acquired immunodeficiency virus
IPCC	Intergovernmental Panel on Climate Change
IWRM	integrated water resource management
JICA	Japan International Cooperation Agency
MAFFM	Ministry of Agriculture, Fisheries, Forestry and Meteorology (Samoa)
MDGs	Millennium Development Goals
MEA	multilateral environmental agreement
NBSAP	national biodiversity strategy and action plan
NEMS	national environmental management strategy
NGO	nongovernment organization
NZAID	New Zealand Agency for International Development
PDMC	Pacific developing member country
PET	polyethylene therephthalate
PEPP	Pacific Energy Policy and Plan
PICCAP	Pacific Islands Climate Change Assistance Program
PIFS	Pacific Islands Forum Secretariat
PNG	Papua New Guinea
POP	persistent organic pollutant
RETA	regional technical assistance
SGP	Small Grants Program (of GEF)
SIDS	small island developing states
SOPAC	South Pacific Applied Geoscience Commission
SPBCP	South Pacific Biodiversity Conservation Programme
SPC	Secretariat of the Pacific Community
SPREP	South Pacific Regional Environment Programme
TA	technical assistance
UNCCDD	United Nations Convention to Combat Drought and Desertification
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme

UN ESCAP	United Nations Economic and Social Commission for Asia and the Pacific
UNFCCC	United Nations Framework Convention on Climate Change
USP	University of the South Pacific
WSSD	World Summit on Sustainable Development

NOTE

In this report, “\$ ” refers to US dollars.

FOREWORD

With almost all Pacific economies and societies relying heavily on natural resources, good environmental management is critical for sustainable development. In recognition of this, and consistent with the Asian Development Bank's (ADB) broader environment policy, ADB has increasingly become an active partner in fostering improved environmental management capacity and performance at the local, sector, national, and regional levels in the Pacific.

The Pacific Region Environmental Strategy (PRES) is the result of a regional technical assistance funded by ADB and the Government of New Zealand. The study covers (i) a review of key environmental issues and main response strategies in the Pacific, (ii) an assessment of past environment-related assistance provided by ADB and other development partners in the region to draw relevant lessons, and (iii) an identification of priority areas for intervention mapping out future directions for ADB's environmental assistance to the region.

This volume and an accompanying executive summary contain the main PRES findings and ADB's environmental assistance strategy for the Pacific. The PRES is part of a broader strategic planning exercise covering ADB's overall assistance to the region for the period 2005 to 2009. A second PRES volume documents case studies carried out to provide important field level context under the theme "mainstreaming environment in development planning and management".

Consultants David McCauley, Gerald Miles, Lope Calanog, and Ricardo Barba prepared the PRES. The team was directed by Daniele Ponzi, Senior Economist (Environment), Pacific Department—who designed and coordinated the implementation of the regional technical assistance with overall guidance from Peter King, Director, Area B, Pacific Department.

Regional consultation with Pacific stakeholders formed an integral part of the process for developing the PRES. Extensive consultations were held with government officials, private sector and civil society representatives, nongovernment and community-based organizations, and international and regional development agencies engaged in managing the Pacific environment. Drafts of the PRES were discussed in various fora including: a PRES consultation workshop in the Fiji Islands (21–22 March 2003), the Second High Level Climate Change Adaptation Consultation and the 3rd Round Table Meeting on Climate Change in the Fiji Islands (8–10 May 2003), and the 2003 Pacific Forum Economic Ministers' Meeting in the Marshall Islands (9–13 June 2003). We look forward to continued engagement with stakeholders in operationalizing and successfully implementing the PRES to provide better environmental management to Pacific countries.



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CHAPTER 1

Rationale and Objectives

Introduction

The Pacific Environment

The economic and cultural patterns of Pacific countries have evolved in a manner that places a strong dependence upon the health of their natural environments. Most Pacific countries are characterized by small island land masses dispersed over the world's largest ocean. Many of their diverse landscapes and seascapes are unique, but due to geographic isolation and often extremely limited land and freshwater resources, they are also naturally fragile and vulnerable to change. This is further complicated by the fact that the region is prone to a wide range of natural disasters, such as volcanic activity and cyclones, and must face the potentially devastating consequences of an increased frequency of extreme climatic events coupled with sea-level rise resulting from global climate change.

On top of these factors contributing to environmental degradation and vulnerability, rapid population growth is leading to unsustainable resource use and increasing levels of pollution in many Pacific countries. National policies and programs to address environmental concerns vary widely across the region, although most Pacific countries acknowledge similar environmental management challenges, including threats to freshwater resources; degradation of marine and coastal environments; degradation of land and forest; increasing waste and problems of urbanization; depletion of biological diversity; concerns about energy use; adaptation to climate change, variability, and sea-level rise; and weaknesses in environmental management capacities and governance. Substantial external assistance, particularly for strengthening environment agencies, combined with government and civil society initiatives, have been insufficient to reduce pressures on the Pacific environment.

ADB in the Pacific

Over the past decade, the Asian Development Bank (ADB) has actively supported Pacific developing member countries (PDMCs) in meeting their national development goals and reducing the incidence of poverty. An important part of this support has included the provision of a

wide range of environment-related assistance. ADB's environmental activities in the Pacific have included 53 country-level technical assistance (TA) projects, 4 grants, 19 regional TAs (RETA) projects, and 15 investment projects, valued at \$23.5 million, \$11.7 million, \$4.9 million, and \$108.8 million, respectively.¹

Beyond obligatory compliance with ADB's own project impact assessment requirements to ensure that environmental considerations are fully incorporated into project design, ADB's activities in the environment area have largely focused on capacity building for environmental management; environmental or natural resources interventions at the country level, such as coastal or forest management; and crosscutting RETAs on themes such as addressing sustainability issues in the live reef fish trade or encouraging appreciation for traditional environmental management practices. ADB's environment-oriented investment projects have mainly dealt with water supply and sanitation services provision, marine and coastal management, solid waste management, and urban environmental quality improvement.

The ADB strategy for the region in 2001–2004, *A Pacific Strategy for the New Millennium*, recognizes the importance of environmental protection and advocates the incorporation of environmental considerations through (i) addressing environmental concerns in economic and governance reform, (ii) strengthening the regulatory and management framework, and (iii) supporting community awareness and environmental education. However, the strategy deals with environmental issues only briefly, and contains no specific guidance on the types of interventions and approaches to be employed.

Despite the amount of resources devoted to these objectives and the apparent attention given to the subject, ADB's environmental programs in the Pacific have been carried out in a rather ad hoc fashion, lacking any systematic approach to identify the highest priority problems and channel ADB's resources into such areas. This new *Pacific Region Environmental Strategy 2005–2009* (PRES) is meant to fill this strategic and programming gap by providing an up-to-date review of environmental management priorities in the region and a specific set of actions to be taken by ADB as an active partner to the PDMCs.

¹ Projects with at least one environmental component in their objectives were defined as environmentally related.

ADB Operations and Environment Policy

In recent years, ADB has adjusted its strategies to better achieve its overarching objective of poverty reduction in Asia and the Pacific. The transformation of ADB from an institution primarily geared to project-based lending to that of a “broad-based development organization” is ongoing, and the reform of policies, governance systems, and institutional capacity building have emerged as key additional elements of ADB’s work. Since the reorganization in 2001, country-level emphasis is being strengthened, country ownership of development programs is being increasingly emphasized, and sector-wide approaches are being increasingly utilized. Amid these changes, the need to mainstream environmental considerations into all aspects of ADB’s operations has emerged as an important objective.

ADB’s current strategies such as the *Poverty Reduction Strategy*, *Long-Term Strategic Framework (2001-2015)*, and *Medium-Term Strategy (2001-2005)* (ADB 1999b, 2001d, 2001g) call for renewed emphasis on sound environmental management in the development process. Environmental sustainability is identified as one of three main crosscutting themes in ADB’s overall assistance strategy and is recognized as a central pillar of any ADB country development strategy. Sustainable natural resource management is also prominent in the ADB strategy for regional assistance to the Pacific.

ADB previously had an implicit environment policy, but this approach has undergone considerable change. Starting from various environment-oriented in-house guidelines dating from the mid-1990s that identified environment-development linkages and tools for use in better supporting the sustainable development process, ADB then gave explicit coverage to environmental issues in the *Emerging Asia Review* (ADB 1996a) and the *Asian Environmental Outlook* (ADB 2001a). As a result, ADB is now paying stronger attention to the environmental dimensions of all its assistance programs. A gradual transition has taken place, from identifying and mitigating potentially adverse environmental impacts of projects, to determining and valuing environmental benefits and costs and including these in the economic analysis of projects. Likewise, an earlier emphasis on regulatory control over pollution and natural resource management has widened to include promotion of market-based environmental policy tools, the use of voluntary approaches,

consumer-based systems such as ecolabeling and ISO 14000 certification, and a move beyond government environmental authorities as chief counterparts to engage more actively with the financial community, private sector, and civil society in environment policy development and implementation.

These shifts in focus culminated in the promulgation of ADB’s *Environment Policy* (ADB 2002c), which stresses the need to mainstream environmental considerations into development planning, policymaking, and investments. The concept of policy integration—placing environmental management concerns firmly within macro and sector plans and programs—has emerged as a crucial element of this new approach. The analytical approach of “strategic environmental assessment” has been identified as a new and potentially important tool to assist this process, together with a new requirement that ADB routinely prepare “country environmental analyses” (CEA) as an integral part of the country assistance programming process.

Need for a Pacific Environmental Strategy

Parallel to these developments in ADB’s Environment Policy, the international community has moved toward operationalizing the lofty goals that emerged from the 1992 United Nations Conference on Environment and Development (UNCED) and *Agenda 2: Blueprint for the 21st Century* (United Nations 1992). The 2002 World Summit on Sustainable Development (WSSD), held in Johannesburg, renewed attention to the importance of understanding and acting on the linkages between environmental management and economic development. In the Pacific, as elsewhere, national and regional assessments were undertaken in preparation for WSSD. All major international organizations with environmental interests, including ADB, provided scientific, analytical, and programmatic inputs to the WSSD planning process.

The assessments for WSSD focused on (i) documenting past achievements and progress over the decade since UNCED; (ii) deriving lessons from the experience in implementing Agenda 21; (iii) prioritizing strategic directions based on identified constraints to the effective implementation of Agenda 21; and (iv) formulating specific program responses, partnerships, and resources to see them implemented. The Millennium Development Goals

(MDGs), agreed to by more than 170 nations, have established a performance-oriented approach to the programming of environmental management and development financing. ADB will remain engaged in this process as WSSD targets are merged with the progress indicators embodied in the MDGs.

From the pre-WSSD and other analyses, a broad consensus now holds that the Pacific—as a subset of the small island developing states (SIDS)—presents very special environmental management and development challenges requiring a fine-tuned set of responses. Together with other SIDS, the Pacific achieved special consideration at WSSD in recognition of the unique challenges inherent in managing their environment (see Appendix 1). In addition to geographic characteristics affecting Pacific economic and social structures, governance issues recently also have come to the fore. The political and economic problems encountered in the Fiji Islands and Solomon Islands are examples of how disruptions to a well-functioning national government can negatively affect the development process. As elsewhere in the developing world, land disputes, ethnic tensions, erosion of cultural values, and infringement of indigenous peoples' rights all affect the prospects for sustainable economic and social development in the Pacific.

Strategy Objectives and Approach

In keeping with these new approaches, ADB has identified the need to establish a strategic framework that will ensure that sound environmental management is built into all of its assistance efforts in the Pacific. The PRES framework identifies the major environmental challenges facing the region, lays out strategic objectives, and enumerates expected outcomes of ADB's assistance. From this framework is derived a clearly defined operational strategy and modalities to carry out proposed assistance projects to achieve the stated objectives.

Preparation of PRES involved a careful sequence of steps. A review was carried out to document the current state of the Pacific environment and to identify key issues relating to environmental management and economic development of PDMCs. Also undertaken was an assessment of recent experience with assistance programs meant to address the most significant

environmental challenges in the region. This included a thorough review of ADB's own assistance activities over the past decade. This analysis is used to derive a realistic future vision, to be achieved by 2009, for improved environmental management in the region, with specific goals for addressing the PDMCs' current environmental and natural resource management problems. An associated intervention strategy for ADB—in cooperation with other stakeholders—was then derived to address the identified priorities, taking into account the comparative advantage ADB brings to this effort. Finally, approaches were identified for monitoring and assessing progress in achieving the goals set through this process.

A participatory approach was utilized in formulating the PRES. Consultations and contributions were sought from close to 100 diverse stakeholders, including (i) PDMC governments, (ii) international organizations and multilateral and bilateral development partners,² (iii) regional organizations,³ and (iv) international and national civil society representatives.⁴ A PRES website (<http://www.adb.org/projects/pres/>) has provided key stakeholders with information on the PRES exercise and content and a venue for sharing comments and views on the draft strategy.

Complementary to the participatory approach, a series of case studies was commissioned to provide important field-level context. These cases document and evaluate promising approaches for mainstreaming environmental considerations into sector planning and programming, and support the strategic and operational analyses of the PRES exercise. The five case studies are presented in the accompanying document entitled

Mainstreaming the Environment in Development Planning and Management. Summaries of the cases are given in Appendix 2.

² Including Australian Agency for International Development (AusAID), Food and Agriculture Organization (FAO), Deutsche Gesellschaft für Technische Zusammenarbeit GmbH (GTZ), United Nations Economic and Social Commission for Asia and Pacific (UN ESCAP), European Union, Japan International Cooperation Agency (JICA) and Japan Bank for International Cooperation (JBIC), New Zealand Agency for International Development (NZAID), United Nations Commission on Sustainable Development (UNCSD), United Nations Development Programme (UNDP), United Nations Environment Programme (UNEP), World Bank, and World Health Organization (WHO).

³ Especially Council of Regional Organizations in the Pacific (CROP) members such as Forum Fisheries Agency, Pacific Islands Forum Secretariat, South Pacific Applied Geoscience Commission (SOPAC), Secretariat of the Pacific Community, South Pacific Regional Environment Programme, and University of the South Pacific.

⁴ Including nongovernment organizations, the private sector, and academe.

Within ADB, strategy preparation was carried out under the initiative and overall coordination of the Pacific Department with active collaboration from other departments, especially the Regional and Sustainable Development Department. An ad hoc informal group with

membership from the departments concerned as well as the NGO Center was formed to guide the strategy's development. ADB's Environment Network also reviewed an early draft of the PRES.



CHAPTER 2

Current Environmental Issues and Challenges

The Pacific and Environmental Challenges

Overview of the Pacific

Geography and Subregional Groupings. Pacific countries have custodianship of a large portion of the earth's surface (Figure 1. Map of the Pacific). Their exclusive economic zones (EEZs) occupy 30 million square kilometers (km²)—an area more than 3 times larger than the People's Republic of China and 10 times the size of India—of which the land area constitutes only 1.8%. The total land area of ADB's 13 PDMCs is only about 543,467 km², with approximately 85% of that belonging to Papua New Guinea (PNG) alone, as shown in Table 1.

ADB's *Pacific Strategy for the New Millennium*, covering the period 2001–2004, adopts a typology of three subregional clusters of PDMCs: (i) the resource-rich but relatively poor countries with high population growth rates (most western Pacific PDMCs); (ii) the more economically advanced countries (Cook Islands, Fiji Islands, Federated States of Micronesia [FSM], Samoa, and Tonga) with a high skill base, moderate resource potential, and relatively low poverty; and (iii) the island atolls (Kiribati, Marshall Islands, Nauru, and Tuvalu) that are severely disadvantaged by their smallness, isolation, and weak resource base.

The Pacific also comprises also three widely accepted ethnic and biogeographic groupings: Melanesia, Micronesia, and Polynesia.⁵ Melanesian countries—such as the Fiji Islands, PNG, Solomon Islands, and Vanuatu—are primarily the exposed tops of undersea mountain ranges. They consist of large, rugged, mainly volcanic islands, generally rich in natural resources, with relatively fertile land and abundant minerals. All Melanesian countries are richly endowed with both living and nonliving marine resources within their EEZs. In contrast, Micronesia and Polynesia comprise mostly groups of small islands. Cook Islands, FSM, Samoa, and Tonga have some volcanic islands with rich soils, but most are small

isolated atolls with little arable land. Among the countries least endowed with arable land or other terrestrial resources are Kiribati, Marshall Islands, and Tuvalu, where the highest elevation does not exceed 5 meters. The seas of Polynesia and Micronesia are generally rich in living resources, pelagic fisheries being the most important from a commercial standpoint, and they are also reported to have significant prospects for exploitable nonliving resources on their seabed. Apart from these, however, their natural resource base is severely limited.

Economic Activities. Agriculture and fishing remain the main economic activities in the Pacific, and for many communities and countries these sectors represent the sole source of income and exports. Cook Islands, Samoa, and Tonga export a wide range of agricultural products. Sugar is a major export of the Fiji Islands, while for PNG, coffee, cocoa, palm oil, and copra are important agricultural exports. Elsewhere, copra and other coconut products are important agricultural exports, although recent market conditions have forced large reductions in output and producers' prices are often highly subsidized.

The other major sources of income are mineral resources, timber, and tourism. PNG has major gold and mineral resources; oil and gas deposits have also been discovered. Gold is an important export for the Fiji Islands, and gold deposits have also been discovered in Solomon Islands and Vanuatu. Timber production is a significant export earner in Fiji Islands, PNG, and Solomon Islands. Tourism is an important and growing source of income for many Pacific countries such as Cook Islands, Fiji Islands, Samoa, and Vanuatu. Table 2 contains, in approximate order of their importance, the main economic activities of each PDMC.

The region's economies are dominated by dualistic structures in which subsistence and monetary economies exist side by side. At present the subsistence economy still predominates in most locales, but all PDMCs aspire to the benefits that flow from a larger formal economy. However, the ability of the subsistence economy to continue to provide basic necessities traditionally obtained from forest, garden, and sea needs to be safeguarded, even as the PDMC economies expand and monetize. Economies under stress, such as Solomon Islands, continue to fall back on the subsistence production system as a social protection safety net.

⁵ The description of the Pacific's ethnic biophysical characteristics draws heavily on the Pacific island countries' presentation to the UN Conference on Environment and Development, *The Pacific Way* (SPC 1992).

Figure 1: THE PACIFIC ISLANDS

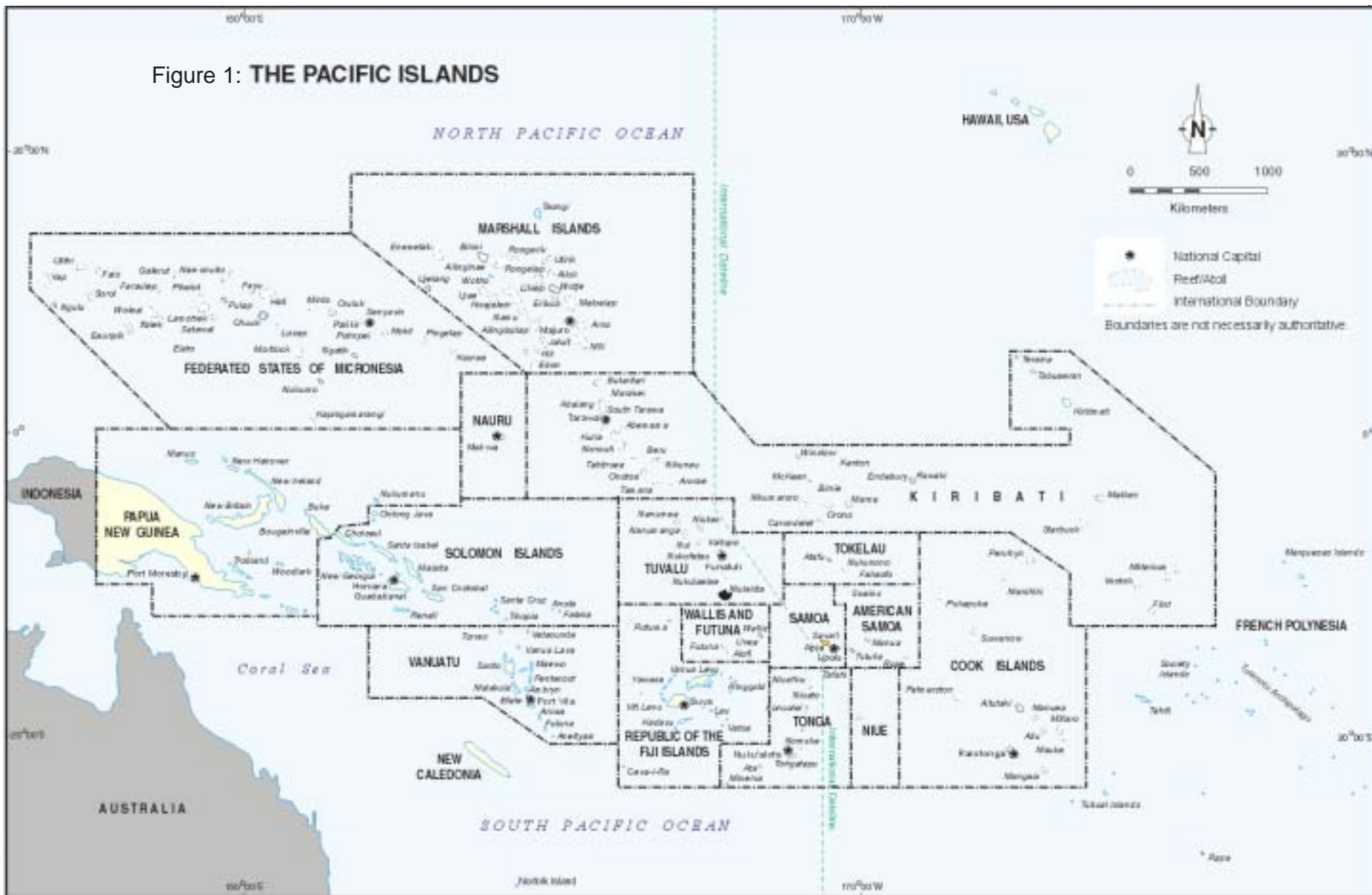


Table 1: Geographic Features of PDMCs

Country	Land Mass (km ²)	Geographic Type	Exclusive Economic Zone (million km ²)
Cook Islands	236	High islands and atolls	1.8
Fiji Islands	18,272	High islands—a few small atolls	1.3
Kiribati	726	Predominantly atolls	3.5
Marshall Islands	181	Atolls	2.1
Micronesia, Fed. States of	702	High islands and atolls	3.0
Nauru	21	Raised coral islands	0.3
Papua New Guinea	462,840	High islands—a few small atolls	3.1
Samoa	2,857	High islands	0.1
Solomon Islands	29,785	High islands—a few atolls	0.6
Timor-Leste ^a	14,874	Part of a high island	–
Tonga	747	High islands—a few small atolls	0.7
Tuvalu	26	Atolls	0.7
Vanuatu	12,200	High islands—a few small atolls	0.6
Total	543,467		17.8

– = not available.

^a Statistics on Timor-Leste (formerly East Timor) are included when referring to PDMCs, since the country is administratively grouped with Pacific countries within ADB. However, in many cases the geographic reference is fixed on the more traditional Pacific island states. A review of environmental and natural resource management issues in Timor-Leste was recently completed under an ADB technical assistance activity (TA No. 3501-ETM: Environmental Assessment Capacity Improvement). The most significant Pacific islands outside ADB membership are those of French Polynesia, New Caledonia, Guam, and the Hawaiian Islands. Palau is in the process of joining ADB.

Sources: ADB 2001b, <http://www.ffa.int/wuw/index.cfm?itemID=4>, and PIFS 2000.

Table 2: Main Economic Activities in PDMCs

Country	Industry
Cook Islands	Fruit-processing, Tourism, Finance, Copra, Citrus fruit, Clothing, Coffee, Fish, Pearls and pearl shells, Mining, Handicrafts
Fiji Islands	Sugar, Tourism, Copra, Gold, Silver, Clothing, Timber, Fish processing, Cottage industries
Kiribati	Fish processing, Seaweed, Copra, Craft items (shell, wood, pearls), Garments, Bananas, Construction
Marshall Islands	Fish, Handicrafts, Copra
Micronesia, Fed. States of	Copra, Fish, Tourism, Craft items (shell, wood, pearls), Offshore banking (embryonic), Coconut oil, Trochus shells
Nauru	Phosphate mining, Offshore banking
Papua New Guinea	Copra crushing, Palm oil processing, Plywood production, Wood chip production, Mining of gold, silver, and copper, Crude oil production, Construction, Tourism, Timber, Coffee, Cocoa, Seafood
Samoa	Fishing, Tourism, Timber, Food processing, Coconut oil and cream, Copra, Beer
Solomon Islands	Timber, Fish, Palm oil, Cocoa, Copra
Timor-Leste	Coffee, Fish
Tuvalu	Fish, Tourism, Copra, Stamps/coins
Vanuatu	Fish, Offshore financial services, Tourism, Food and fish freezing, Wood processing, Meat canning, Coconuts, Cocoa, Coffee

Source: ADB Annual Reports, SPC 1998, and SOPAC 1999.

Sociopolitical Features. The patterns of social and cultural organization found among the Pacific’s ethnic biogeographical groupings have practical significance, including relation to systems of governance, although these groupings are not synonymous with national boundaries. Dominant members of society, often called “big-men,” generally hold the positions of highest authority in Melanesian countries; Polynesia has a well-developed and still operative patrilineal system of chiefs; while Micronesia follows a matrilineal system of chiefs.

The region’s political security has become less stable in recent years. Direct conflict—as seen recently in the Fiji Islands and Solomon Islands—has commonly been attributed to ethnic differences, land disputes, economic disparities, and a lack of confidence in the government’s ability to resolve differences fairly or satisfactorily. Weaknesses in the region’s governance systems take many forms, extending from capacity constraints in line ministries to critical weaknesses in legislatures, overall government accountability, and the judiciary. There is also a sense that the Pacific is falling behind in global competition because of widening gaps between Pacific capacities—knowledge, income, privilege, and power—

and those with whom they trade and otherwise interact in Asia and the West. Pacific countries seem to be peculiarly vulnerable to unscrupulous purveyors of fraudulent schemes and scams. Within countries, the disparity is also growing between those residing in urban areas and rural or outer island settings in terms of education and related economic opportunities and basic services (PIFS 2002a).

Human Development. The Pacific region is characterized by relatively high average per capita incomes compared with the rest of the developing world. However, poverty remains a serious challenge. Table 3 provides selected human development indicators; details of related socioeconomic information are further documented in Appendix 3.

High rates of unemployment lie at the core of many of the social problems faced by Pacific countries. In some PDMCs, up to seven times as many young people are seeking work each year as there are new jobs available. Women are disadvantaged in the job market. Unemployment also has led to considerable outmigration from the region in search of employment.

Table 3: Human Development and Poverty Indexes for Pacific Island Countries

Country	Population	Per Capita GDP	Life Expectancy (Male)	Life Expectancy (Female)	Adult Literacy	Human Development Index ⁽¹⁾	Human Poverty Index ⁽²⁾
Cook Islands	19,103	5,524	71	74	99	0.822	6.1
Timor-Leste	884,000	334	–	–	–	–	–
Fiji Islands	775,077	1,777	67	71	93	0.667	8.5
Nauru	9,919	4,715	55	62	95	0.663	12.1
Tonga	97,784	1,407	65	71	98	0.647	5.9
Samoa	161,298	1,406	66	73	80	0.590	8.6
Tuvalu	9,043	1,251	64	70	64	0.583	7.3
FSM	105,506	2,145	64	67	71	0.569	26.7
Marshall Islands	50,840	1,946	66	69	97	0.563	18.7
Kiribati	77,658	511	59	65	77	0.515	12.7
Vanuatu	193,219	1,186	64	67	64	0.425	46.4
Solomon Islands	285,176	490	64	66	64	0.371	49.1
PNG	4,790,800	687	55	57	64	0.314	52.2
Average						0.560	21.19

FSM = Federated States of Micronesia; PNG = Papua New Guinea, – = not available.

(1) Higher values indicate higher levels of human development.

(2) Lower values indicate lower human poverty.

Sources: ADB 2001b, SOPAC 2002b, and UNDP 1999.

A range of population and demographic issues has been identified as critical to the region's development context and prospects. At the Thirty-Third South Pacific Forum held in the Fiji Islands on 15–17 August 2002 (PIFS 2002b), Pacific leaders concluded that population growth is likely to continue for at least the next 3 decades in most countries, and that finding a balance between population and resources is an “unprecedented challenge.” Demand for imported goods and for a widening range of services continues to rise, as the policies and programs of most governments in the region emphasize growth in per capita income and living standards (SPC 2002a).

The capacity to educate growing populations in the Pacific, while varying from country to country, is generally weak and deteriorating. These shortcomings in basic education will lead to poor uptake of technical skills and deficiencies in the knowledge base necessary for economic growth and basic environmental management.⁶

Improvements in health care and reductions in infant mortality are now being more than balanced by the prevalence of “lifestyle” diseases, accidental deaths, the resurgence and emergence of infectious and vector-borne diseases, and sexually transmitted infections such as HIV/AIDS. The number of reported cases of HIV/AIDS has risen steadily in the Pacific, with approximately 50% of all new infections among young people. Given the age distribution in the region—40–60% of the population is under 25 years of age—HIV/AIDS prevention has become a pressing concern (PIFS 2002a).

Structural weaknesses of health systems have become increasingly evident at the very time when demand for community and national health services is growing. The *Pacific Human Development Report* (1999) of the United Nations Development Programme (UNDP) notes that common problems are declining funding, nonsupportive macroeconomic policies, a growing burden of poverty, and the emergence of new diseases and a resurgence of old ones. While environmental causes of disease (mostly from waterborne vectors) appear to be in relative decline,

⁶ As noted in a recent review, the education shortcomings have wide ramifications: “Perhaps the most urgent concern across the region is how to better meet the needs and aspirations of the upcoming generation. The UNDP notes that 20% of the region's population is aged between 15 and 24 years—a total of 1.4 million, which is expected to rise by a further 300,000 by the year 2010. Many school leavers find they have inadequate or inappropriate skills for the few waged jobs that are available, for agricultural work or for other types of livelihood. Most lack opportunities to upgrade their skills because too few non formal training programs are available” (PIFS 2001).

significant localized problems are still attributable to pollution, especially sewage discharges to water bodies and contamination of groundwater. Expanding squatter communities on the fringes of urban areas are particularly vulnerable to diseases caused by pollution.

Defining Characteristics of Pacific Countries

In sum, the Pacific is characterized by small land masses dispersed over part of the world's largest ocean. The region is diverse, although there are many common characteristics. Those directly relating to management of the region's environment can be summarized as follows:

Geographical Isolation. Though communications have improved over the last 10 years, the geographic position of the PDMCs continues to present fundamental challenges to development, and has also contributed to the specialized cultures, ecosystems, species endemism, and vulnerability to invasive species that occur in the region.

Limited Land Resources. Fragility of ecosystems is often compounded by their small size. With the exception of PNG, limited land resources make many terrestrial and nearshore resources, including freshwater, vulnerable to overexploitation and pollution from poorly planned waste disposal. Limited land resources have become especially troubling for low-lying atolls in view of the projected rates of sea-level rise from global warming over the next 50–100 years.

Rapid Population Growth. Rebounding from the depopulating diseases of first contact with colonial powers, Pacific island countries' populations have grown rapidly over the past 100 years; such growth has been linked to the degradation of forests and fisheries and to loss of species. These pressures are now easing, as population growth rates are beginning to slow and are further offset in some places by an upward trend of outmigration.

Dependence on Marine Resources. Except in some of the higher islands, many Pacific families remain strongly dependent on marine resources to meet their daily needs—providing foods, tools, transport, and waste disposal. This may be slowly weakening in certain areas with the increase in international trade, but it continues to represent a fundamental characteristic of the smaller atoll-dominated PDMCs such as Kiribati, Marshall Islands, and Tuvalu.

Fragile Island Environments. Globally, island environments have the highest rates of species extinction, and recent evidence of the negative impacts of ocean temperature rise on the health of coral reefs (through the “bleaching” effect) is indicative of the relative fragility of island ecosystems.

Vulnerability. Exposure to natural disasters and to external and global perturbations (for instance, in climate, trade, and capital markets), and a heavy reliance on a limited range of economic sectors creates a high degree of vulnerability to change (Thistlethwaite and Votaw 1992). Moreover, the factors contributing to island vulnerability appear to have strengthened in recent years. The “baseline” of assets and lives at risk is also increasing as populations and infrastructure located in coastal areas expand and Pacific island economies are opened to the global economy. This combination of increased risk and an increased population and asset base subject to those risks is a worrying trend.

Key Development and Environmental Challenges

Development Issues. The ecological dependency of Pacific economies and societies is well recognized in the region.⁷ The isolation and dispersion of people—coupled with a lack of basic infrastructure—mean that transport, communication and servicing costs are disproportionately high for PDMCs compared to countries located in closer proximity to their export markets and sources of imports. The economies and natural environments of many Pacific island countries remain extremely fragile. Substantial trade deficits are routine and can be sustained only because of large continuing inflows of finance from

⁷ The statement presented to the UN Commission on Sustainable Development on 19 September 2001, resulting from consensus reached at the Multistakeholder Consultation on Sustainable Development in the Pacific, Apia, 5–7 September 2001, eloquently states: “We, the countries of the Pacific region, share a common unique identity, and have a responsibility for the stewardship of our islands and resources. Our Ocean has supported generations of Pacific communities—as a medium for transport and as a source of food, tradition and culture. Our present, and future, well-being is dependent upon it. Our ecosystems contain high biological diversity that has sustained the lives of Pacific communities since first settlement. They contain the most extensive coral reefs in the world, unique landforms, globally important fisheries, significant mineral resources and high numbers of endemic species. They may also contain many undiscovered resources of potential use to humankind. To safeguard Pacific communities and maintain the health of our ecosystems, in perpetuity, it is imperative that we apply the precautionary approach as outlined in the Rio Declaration, Principle 15. Overcoming the well recognized vulnerability of islands to the effects of global climate change, natural disasters, environmental damage and global economic shocks will be an essential element of sustainable development in our region.”

abroad. Particularly in Polynesia, remittances from overseas residents are a very important part of the economy. Other important sources of foreign exchange for PDMCs are assistance from bilateral and multilateral aid agencies, export earnings from agricultural produce, tourism, artifacts, and license fees from foreign deepwater fishing nations for fishing rights in EEZs.

Traditional knowledge and practices have enduring and major relevance for environmental protection in the Pacific. In customary land tenure situations common throughout the region, a large degree of communal control is retained over land use and the exploitation of natural resources. The custom of imposing special prohibitions (“taboos”) against certain practices in a given area is also widespread. Where chiefly authority has been eroded, such conservation practices are no longer fully applied or enforced. In some countries, negotiations on land use, such as the exploitation of a forest, are not undertaken through national or provincial governments but directly between the proponents of the economic venture and customary landowners. In many cases, the degree of on-site environmental control that government agencies have been able to exert has been quite restricted, and land disputes are common. The number and role of nongovernment organizations (NGOs) and community-based organizations (CBOs) has increased steadily throughout the region and they are now fulfilling important functions in helping local communities, villages, and districts to address these and other development and environmental management challenges.

In addition to these cultural norms, social and economic patterns and pressures also strongly affect the PDMCs’ prospects for achieving sustainable development, providing as they do an important context for environmental management efforts. Especially over the past decades, the Pacific region has been confronted by significant economic and social change. This has included the impacts, both positive and negative, of “globalization, deteriorating terms of trade, rising external debt and unsustainable development policies [as well as] more short-term developments such as the financial crisis in Asia” (PIFS 2002a). As a result, the people of the Pacific have experienced increased unemployment, a rising incidence of poverty, reduced social cohesion, and a widening gap between rich and poor. This has affected, at least in part, the security and stability of several Pacific island countries.

Environmental Issues. The state of the region's environment has been assessed several times over the past decade: in preparation for the UNCED meeting in 1992 (SPC 1992); and most recently in 1999 with publication of the *Pacific Environment Outlook* (SPREP, UNEP, and EU 1999). A number of Pacific countries—Cook Islands, Marshall Islands, Niue, Samoa, and Tonga—also produced national environmental assessments in advance of the 2002 WSSD meeting in Johannesburg. Summaries of environmental trends and conditions have also been included in recent reports of the United Nations Economic and Social Commission for Asia and the Pacific (UN ESCAP) on the *Asia-Pacific State of the Environment* (Task Force for the Preparation of WSSD in Asia and the Pacific 2001a, and 2001b) and in the United Nations Environment Programme's (UNEP) *Global Environment Outlook* (UNEP 2002).

While these recent reviews constitute important contributions to our knowledge of the region's environment, they have been based on national reports and regionally synthesized data compiled as the resources and impetus became available. No systematic effort has been made to update such analysis and information routinely or to invest in a Pacific-based capacity to do so. Thus, the ability to effectively monitor environmental changes occurring in the region remains very weak. Reporting on the environment has also generally been complex and data-focused in its structure and geared more to the audience of the global environmental community than to Pacific policymakers, developers, or environmental managers.

A review of these reports highlights the paucity of data from which environmental change may be monitored and management decisions predicated. The limited data available, in most cases, have not been routinely updated or collected on a time series basis to facilitate the identification of trends. Where information has been collected over time, the units and measures are often not comparable. Information about pressures considered to constitute important root causes of environmental change and degradation does exist, but little analysis is available to connect cause-and-effect relationships.

Better statistical information regarding the region's economy is available, and it clearly shows that recent overall economic performance has been disappointing (Duncan, Cuthbertson, and Bosworth 1999). Within this context, Pacific countries have generally placed their

highest priority on achieving economic growth; environmental management has largely been perceived as a concern that can be dealt with in the later stages of economic development. As a result, PDMCs have allocated only meager resources to environmental protection and natural resource management, and have primarily looked to inflows of aid to support this area of investment. The predominance of small- and medium-sized enterprises in the private sector has also hampered government and industry efforts to introduce environmental protection measures or best practices.

A broad consensus has been reached over the past decade on the most significant environmental problems facing the Pacific region.⁸ These priorities are also reflected in agreements reached in international forums concerning sustainable development of island nations (SPREP 1993b). The eight challenges that consistently emerge as of highest priority are (i) threats to freshwater resources, (ii) degradation of the marine and coastal environment, (iii) degradation of the land and forest, (iv) issues of urbanization and waste management, (v) depletion of biological diversity, (vi) concerns about energy use, (vii) adaptation to the consequences of climate change, and (viii) weaknesses in environmental management capacities and governance.

Priority Actions. In recent years, the importance of actively promoting a more sustainable economic development process has become widely accepted in the region.⁹ At the global level, the latest expression of Pacific sustainable development priorities emerged from the Small Island Developing States (SIDS) statements prepared for the WSSD; the main elements of the Pacific Submission to the Summit (Appendix 1) were reflected in the global SIDS Statement. The Pacific countries agreed on the need for the following urgent actions:

- (i) establishing sustainable management practices for the region's fisheries, and taking efforts to

⁸ The sections that follow draw upon national and regional state of the environment reports (SPREP 1993a, 1993c, 1993d, 1993e, 1993f, 1993g, 1993h, and 1993i); Strategic Action Programme for *International Waters of the Pacific Islands Region* (SPREP 1998); and the *Action Plan for Managing the Environment of the Pacific Region (1997-2000)* (SPREP 1997a).

⁹ This acceptance is increasingly reflected in the work of leading Pacific regional organizations, including the Pacific Islands Forum Secretariat and other members of the CROP. Among these, SPREP is the most focused on these issues, and its Action Plan contains a key result area focusing on sustainable economic development (SPREP 1997a). SOPAC has also produced a draft sustainable development strategy to help guide its own work (SOPAC 2002b).

- ensure that Pacific countries benefit from their exploitation;
- (ii) delimiting and managing coastal areas, exclusive economic zones, and the continental shelf;
- (iii) conserving marine and coastal biological diversity;
- (iv) improving freshwater management;
- (v) reducing, preventing, and controlling waste and pollution and their health-related impacts;
- (vi) developing community-based initiatives to promote sustainable tourism, including ecotourism;
- (vii) developing comprehensive hazard and risk management, disaster prevention, mitigation, and preparedness;
- (viii) developing economic, social, and environmental vulnerability indexes and related indicators as aids to policies to promote sustainable development;
- (ix) adapting to the adverse effects of climate change, sea-level rise, and climate variability;
- (x) building capacity to implement intellectual property regimes;
- (xi) developing environmentally sound energy services;
- (xii) providing equitable access to health care and health systems to fight and control communicable and noncommunicable diseases (in particular, HIV/AIDS, tuberculosis, diabetes, malaria, and dengue fever);

- (xiii) maintaining and managing systems to deliver water and sanitation services, in both rural and urban areas; and
- (xiv) eradicating poverty and improving trading conditions.

Environmental concerns are increasingly placed within a broader framework of sustainable development and the need to take account of the special characteristics of SIDS. This forms the basis for examining the current environmental situation and the eight key regional challenges as a foundation for defining the PRES approach.

Pacific Environmental Issues

Freshwater Resources

Current Status. The PDMCs' water resource endowments vary widely, depending on climatic and geophysical characteristics. Large islands have watersheds with rivers and streams (often intermittent) as well as a range of groundwater resources. On many smaller islands freshwater is extremely scarce and rainfall harvesting supplies most resources. Freshwater "lens" groundwater resources are formed in a large number of Pacific islands, though these are increasingly subject to unsustainable extraction and/or contamination, especially on atolls. The

Table 4: Summary of Freshwater Resources and Uses in PDMCs

Country	Freshwater Use Other Than Water Supply	Main Freshwater Resource
Cook Islands	T	SW, GW, RW
Fiji Islands	T, H, I, E	SW, GW, RW, D (tourist resort only)
Kiribati		GW, RW, D (limited)
Marshall Islands		RW (airport catchment and buildings), GW, D (emergency)
Micronesia, Fed. States of		SW, GW, RW
Nauru		GW, RW, D
Papua New Guinea	M	SW, GW, RW
Samoa	T, H	SW, GW, RW
Solomon Islands		SW, GW, RW
Tonga		GW, RW, SW (limited)
Tuvalu		RW (primary), GW (limited), D (emergency)
Vanuatu		SW, GW, RW

SW = surface water, GW = groundwater, RW = rainwater, D = desalination, T = tourism, H = hydroelectricity, M = mining, I = irrigation, E = Export.

Source: Falkland 2002.

Table 5: Profile of Pacific Populations with Access to Sanitation and Safe Water

Country	Percent of Population with Access to Sanitation (UNDP 1999)	Percent of Population with Access to Sanitation (WB 2002)		Percent of Population with Access to Safe Water		Percent of Population with Access to an Improved Water Source (WB 2002)
		Urban	Rural	UNDP (1999)	ADB (2001)	
Cook Islands	98	–	–	95	99	–
Fiji Islands	85	75	12	77	77	47
Kiribati	46	54	44	76	76	47
Marshall Islands	77	–	–	82	82	–
FSM	51	–	–	44	44	–
Nauru	97	–	–	100	100	–
PNG	25	92	80	24	41	42
Samoa	97	95	100	90	68	99
Solomon Islands	16	98	18	64	64	71
Timor-Leste	16	–	–	–	–	–
Tuvalu	49	–	–	85	85	–
Vanuatu	91	100	100	87	77	88

FSM = Federated States of Micronesia, PNG = Papua New Guinea, – = not available.

Sources: ADB 2001b, SOPAC 2002b, UNDP 1999, and World Bank 2002.

range of freshwater resources and their current uses are summarized in Table 4, and information concerning access to safe water in the region is given in Table 5.

Priority Issues. The protection and conservation of the supply and quality of freshwater is becoming an increasingly important issue in the Pacific, and it will take on even greater significance if global climate change results in higher variability of rainfall in the region. In many PDMCs, management of those water resources already in use represents a greater challenge than expanding supplies. Existing water management regimes are often hampered by weak supporting legislation, problems with cost recovery for services, insufficient technical capacity for water infrastructure management, and perennial challenges of landownership and water rights. The threat to the quality and quantity of freshwater resources posed by climate change, variability, and sea-level rise could be fundamental to the security and development of island states, particularly low-lying atolls.

Effective water management in the Pacific is frequently constrained by three common problems: poorly planned urban development, (ii) damage to or deterioration of water catchments, and (iii) inadequate waste disposal. Lasting improvements in both the economics and engineering of water management will

require introduction of integrated water resource management (IWRM) approaches that will deal in a coordinated fashion with many sectors and users and employ natural hydrological systems (both surface and groundwater) as units for planning. Within an IWRM framework, appropriate measures can be planned and taken to

- (i) improve watershed management;
- (ii) reduce deforestation rates;
- (iii) raise public awareness about wise water use and management practices;
- (iv) control inappropriate agricultural activities in key catchment areas;
- (v) assure that water withdrawals are consistent with both available resources and the highest-valued uses of the resources;
- (vi) have due consideration for meeting basic human needs for access to water supplies; and
- (vii) introduce improved methods for waste disposal, especially sewage disposal facilities.

Regional Responses. A new strategy to deal with the most important sustainable water management issues in the Pacific region was approved by participants at a week-long meeting in Sigatoka, Fiji Islands, in July 2002. Ministers and other senior government representatives

came together with partners from multilateral and bilateral agencies, civil society (including NGOs and CBOs), and the private sector to set priorities and decide upon the best course of action. Cosponsored by ADB and the South Pacific Applied Geoscience Commission (SOPAC), the meeting passed a resolution containing an action plan that centered on applying an IWRM approach and called for collaborative interventions in six main areas:

- (i) *Water resource management.* Strengthen capacity, specially in local communities, to conduct water resource assessment and monitoring to improve the integrated management of water resources in catchments, and permit the use of appropriate technologies for water supply and sanitation systems and improved approaches for addressing the problems of rural and periurban communities.
- (ii) *Island vulnerability.* Develop the capacity to apply available information to cope with climate variability and change, and transform the paradigm of dealing with island vulnerability from disaster response to proactive hazard assessment and risk management, involving local communities.
- (iii) *Participation, information, and education (awareness).* Ensure that all levels of society are aware of the issues at stake and have a voice adopt national frameworks to allow open participation of communities in sustainable water management to make information more widely available and to mainstream water and sanitation education into formal curricula. Encourage government, civil society, and the private sector to work in partnership to involve all stakeholders.
- (iv) *Technology.* Underline the use of available and appropriate water, sanitation, and wastewater technologies, and give special emphasis to reducing unaccounted-for water. Develop island-specific training programs.
- (v) *Institution strengthening, inter-agency partnership, and governance.* To ensure a strong institutional framework for sustainably managing water resources, adopt national visions, policies, plans, and legislation appropriate to each Pacific island country to take into account the particular social, economic, environmental, and cultural needs of citizens. The action plan stresses the need to work together for the development of institutional arrangements, for strong national and regional leadership in water resource

management, and for regional partnerships in capacity building.

- (vi) *Financing policies.* Encourage national sector plans that identify the economic, social, and environmental costs of different services and pricing policies, to ensure the proper allocation of resources for water resource management and water services and create a better environment for investment by both the public and private sector. Establish financially viable enterprises for water supply and sanitation that result in improved performance, ensuring appropriate cost recovery, tariffs, billing, and collection and financially sound operating systems. Improved operational efficiency should reduce costs. Utilize private sector resources through public-private partnerships. To ensure access by the poor, the action plan also proposes developing pro-poor policies that include tariffs with lifeline blocks and transparent and targeted welfare programs (ADB and SOPAC 2002).

The implementation process associated with the Sigatoka Action Plan for improved water resource management provides for its official endorsement by Pacific governments; most PDMCs already have become signatories. This strategy was further vetted and publicized at a special session of the Third World Water Forum held in Kyoto in March 2003, as it is meant to serve as a framework for coordinating international water resource management assistance to the region.¹⁰

Local Responses. In the years ahead, striking a proper balance between meeting the basic human need of at least minimal levels of water and providing cost-effective water supply and wastewater treatment services for growing urban populations will constitute one of the principal environmental and natural resources challenges facing the Pacific region. Work is progressing at the local level on many of the key water management topics identified in Sigatoka. These actions include improved management of surface water catchments or freshwater lens systems, water conservation and education programs, and new policy and institutional approaches. Limited activities also are beginning to be implemented to adapt water management strategies to climate change and vulnerability (see the section on adaptation).

¹⁰ Wastewater management issues are discussed in more detail in the section on urbanization and waste management.

In the Fiji Islands, the Wai Bulabula Project has integrated watershed management with wastewater treatment and coral ecosystem rehabilitation. The centerpiece of this pilot program, a first for the Fiji Islands and perhaps the South Pacific, is a constructed wetlands treatment system at Shangri-La's Fijian Resort, located on Yanuca Island in Sigatoka, that uses plants to remove additional organic contaminants biologically after primary treatment of wastewater by the resort's sewage treatment plant. Additional activities have included public education on soil and water conservation efforts in the nearby catchment area—where steep slopes are cultivated—and reforestation programs.

In Kiribati, potable water is derived from withdrawals from the freshwater lens supplemented by rainwater harvesting. Relative to population demands, available resources are quite scarce, especially in dry years and in the densely populated capital of South Tarawa. For this reason, a range of new technical and institutional approaches has been applied to determine and maintain sustainable groundwater withdrawals and to protect the quality of this valuable resource. One of the most innovative measures taken has been the establishment in the capital area of a water resources protection committee to involve the community in decision making. Landowners select members to the Committee to represent their interests and to canvas support for the voluntary relocation of people whose physical presence in sensitive reserve areas is risking pollution of this vital community asset. While it is proving a difficult task, this effort illustrates the importance of linking technical measures to culturally based approaches in the Pacific context.

In the Cook Islands, the Government has been grappling with how best to ensure sound water supply and wastewater treatment policies and practices in the context of the country's ongoing decentralization efforts. Attempts to encourage community participation in the provision of municipal services, and to devolve governance through the creation of elected *vaka* councils on Rarotonga and the Island Council of Aitutaki, have met with mixed success. The need for sustained financing for water supply has encouraged movement toward an expanded role for the private sector in providing infrastructure and services. This has, in turn, required a more effective and independent government regulatory and oversight framework. Similar privatization efforts are being explored in the Fiji Islands, with ADB assistance, to improve water and wastewater management services in the Suva-Nausori area.

In PNG, the Australian Government is working with remote villagers along the South Fly River in Western Province to provide a minimal level of drinkable water to some of the villages along the Torres Strait. Steel apparatuses with 9,000-liter polypropylene water tanks attached to them have been erected to catch rainwater, thus relieving villagers of the burden of walking for hours to collect water. The Australian Government is also supporting Samoa in strengthening the financial and human resources and asset management systems of its Water Authority, which is confronted with the problem of providing a safe, reliable, and cost-effective water supply.

Coastal and Marine Resources

Current Status. Island cultures have evolved through interaction with the sea; in one way or another, the economies and lifestyles of all Pacific island nations are dependent upon their coastal and marine resources. Coastal and marine ecosystems directly underpin the tourism and fisheries sectors, but these are under increasing pressure from human activities across the region. This section reviews some of these threats and measures being taken to deal with them, giving special attention to sustainable fisheries and the health of coral reefs as the most important of coastal ecosystems.

In terms of its oceanic fisheries, the Pacific region is recognized "as the most important tuna fishing area of the world... contributing about a third of all tuna caught ... and dwarf[ing the resources] of the other three major tuna fishing areas both in volume and in value" (Gillet et al. 2001). Catches have remained relatively stable over the past 10 years—fluctuating around 1-1.2 million tons per year—while annual catch values over the same period have ranged between \$750 million and \$1.9 billion. This is equivalent to an average of about 10% of the combined gross domestic product (GDP) of all the countries in the region, or about half of the value of all the region's exports (Gillet et al. 2001).

Only a small portion of this income accrues to the region, however. The pelagic tuna fisheries are primarily exploited by distant fishing nations, which pay approximately 5% of the landed value to the Pacific states in access fees, amounting to some \$60 million in 2001. This rather low economic rent to the Pacific countries reflects the reality that most of the production costs—fuel, services, provisioning, etc.—are incurred outside the

region, though most of the profits also flow outside the region. Nevertheless, the oceanic tuna fishery employs approximately 10,000 Pacific islanders, with a further 11,000-21,000 persons working in tuna-related industries and services. The five established tuna canneries provide jobs for 5% of all formally employed women in the region. The tuna industry clearly is playing an important role in the economies of the region, and this role could be even greater if PDMCs were able to capture more of the resource rent.

In recent years questions have been raised about the sustainability of fishery resources under current rates of exploitation. Skipjack tuna resources are considered healthy, with perhaps even some limited potential for increased catch. However, the larger tunas are considered to be fully exploited, and some species are showing signs of overexploitation. The importance of conservation and improved management to ensure sustainability of harvests thus cannot be overemphasized. This is no easy matter, as it is very difficult to determine levels of sustainable catch for this highly migratory fish stock. Measures are now being taken to address the threat of overharvesting. The adoption of the Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific in September 2000 in Honolulu, Hawaii, paved the way for the establishment of the Commission for the

Conservation and Management of Highly Migratory Fish Stocks in the Central and Western Pacific Ocean. The main task of the Commission is “to determine the total allowable catch or total level of fishing effort within the Convention Area for such highly migratory fish stocks as the Commission may decide and to adopt such other conservation and management measures and recommendations as may be necessary to ensure the long-term sustainability of such stocks.”

Pelagic fish stocks get much of the international attention, but inshore fisheries and mariculture also are of importance on a localized basis throughout the Pacific. They form an especially important part of the subsistence and local cash economies in many islands. The annual value of all fisheries is shown in Table 6.

Coral reefs, mangrove forests, sea grass beds, and other coastal/marine ecosystems are crucial to the well-being of Pacific island countries and communities. They form the ecological foundation of Pacific fisheries and other elements of island economies, and they contribute significantly to Pacific peoples' income, health and nutrition, coastal protection, and road and building construction, as well as to the tourism industry. Reef systems, in particular, are highly biodiverse and yet are increasingly at risk. Table 7 highlights the threats to reefs

Table 6: Estimated Annual Value of Fisheries Production for Pacific Island Countries
(late 1990s, \$'000)

Country	Subsistence Fishing	Coastal Commercial Fishing	Offshore Local Fishing	Offshore Foreign Fishing	Total
Cook Islands	1,164	10,320	397	407	12,288
Fiji Islands	24,675	15,232	25,640	555	66,102
Kiribati	7,890	6,310	0	132,258	146,458
Marshall Islands	3,836	973	0	50,000	54,809
Micronesia, Fed. States of	10,000	14,500	12,495	144,000	180,995
Nauru	332	1,118	250	36,774	38,474
Palau	2,500	2,595	12,500	270	17,865
Papua New Guinea	20,227	21,394	44,344	75,074	161,039
Samoa	7,143	6,583	9,840	99	23,665
Solomon Islands	8,061	1,902	69,242	827	80,032
Tonga	3,992	10,856	3,676	104	18,628
Tuvalu	931	284	0	38,000	39,215
Vanuatu	3,975	682	0	253	4,910
Total	94,893	92,800	178,384	478,625	844,702

Source: Gillet and Lightfoot 2001.

Table 7: Pacific Reefs at Risk

Statistics for Selected States	Total	Reef Area (km ²) by Threat Category			Percentages			Marine Protected Area	
		Low	Medium	High	Low	Medium	High	No.	Area (km ²)
Pacific Region	108,000	63,500	33,900	10,600	59	31	10	92	372,809
Fiji Islands	10,000	3,300	4,800	1,900	33	48	19	1	1
French Polynesia	6,000	4,900	1,100	0	82	18	0	1	124
Marshall Islands	6,000	5,800	200	0	97	3	0	2	163
New Caledonia	6,000	5,000	800	200	83	13	3	5	530
PNG	12,000	6,000	4,500	1,500	50	38	13	8	2,149
Solomon Islands	6,000	3,000	2,500	500	50	42	8	–	–

PNG = Papua New Guinea; – = not available.

Source: Bryant et al. 1998.

in a selection of Pacific island states and Table 8 gives an indication of the rich diversity of coral reef ecosystems in the region.

Priority Issues. The acknowledged threats to marine and coastal resources stem primarily from

- (i) discharges of nutrients derived from sewage, soil erosion, and agricultural fertilizers;
- (ii) improper solid waste disposal;
- (iii) accelerated sediment discharge, for example from building construction sites or road building;
- (iv) physical alterations through destruction of fringing reefs, beaches, wetlands, and mangroves for coastal development and from sand extraction;
- (v) logging; and
- (vi) overexploitation of fisheries.

Many of these threats are directly related to the rising density of resource-dependent human populations in coastal areas. For example, in the FSM's recently released National Biodiversity Strategy and Action Plan, "reef and marine degradation and the loss of biodiversity (especially among food fishes) are attributed to various anthropogenic sources within urban centers" (Government of FSM 2002). The consequences of global climate change—increased extremes of weather and rising sea levels—and marine invasive species also threaten marine/coastal ecosystems.

The chief threats to coral reefs, in particular, include

- (i) pollution from sewage, fertilizers, biocides, toxic wastes, oil spills, solid wastes, freshwater runoff, and other land-based pollutants;

- (ii) siltation due to soil erosion from inappropriate land management practices (for example in agriculture, forestry, mining, road building, and site clearance);
- (iii) overexploitation, especially the taking of commercially valuable species such as beche-de-mer, giant clams, trochus, certain fish and shellfish; live coral harvesting for aquariums and the tourist trade; mining of coral heads for construction, and subsistence fishing;
- (iv) destructive fishing and collecting methods (for example poisons, explosives);
- (v) land reclamation (including mangrove and reef-flat destruction), inappropriate coastal protection works, and unsound mariculture practices;
- (vi) coastal and marine development projects occurring with inadequate or no environmental impact assessment (EIA);
- (vii) channel blasting and dredging activities;
- (viii) mining of beach and reef materials;
- (ix) coastal erosion and accretion;
- (x) tourism activities and related developments;
- (xi) military testing, training, and dumping (for example nuclear testing, munitions disposal); and
- (xii) catastrophic events (for example tropical cyclones, volcanic eruptions, earthquakes, tsunamis, coral bleaching, crown-of-thorns starfish infestations, severe El Niño Southern Oscillation events, and possible climate change and sea-level rise) (SPREP 1996b).

Regional Responses. Working closely with the Forum Fisheries Agency (FFA), the South Pacific Regional

Table 8. Maximum Number of Hermatypic (Reef Forming) Coral Species in the Pacific

Country	No. of Species
Papua New Guinea	517
Solomon Island	398
Fiji Islands	398
Palau	384
Vanuatu	379
Kiribati	365
New Caledonia	359
Marshall Islands	340
Guam	220
Samoa	211
Cook Islands	172
French Polynesia	168
Hawaiian Islands	49
Pitcairn Islands	42

Source: Spalding et al. 2001.

Environment Programme (SPREP), and other regional organizations, the Secretariat of the Pacific Community (SPC) generally has taken the lead in managing and regulating marine and coastal resources in the Pacific region. This task is undertaken through its three constituent programs: the Oceanic Fisheries Program (OFP), the Coastal Fisheries Program (CFP), and the Regional Maritime Program (RMP). The OFP, a scientific support and advisory service, provides Pacific member countries with the information and advice necessary to rationally manage the region's tuna, billfish, and related species. The CFP, a regional support service, assists Pacific islanders in identifying the status, and optimizing the long-term social and economic value, of small-scale fisheries and aquatic resources. The RMP aims to provide for safer shipping, cleaner seas, and improved social and economic well-being of seafaring communities by strengthening the capacity of Pacific islanders to manage, administer, regulate, control, and gain employment in the maritime transport sector in a socially responsible manner.

UNDP, with financing from the Global Environment Facility (GEF), has supported the Strategic Action Program for the International Waters of the Pacific Small Island Developing States, aimed at conserving and sustainably managing the region's coastal and ocean resources. This 5-year Program, which commenced in July 2000, has

components that address both coastal resources and pelagic fisheries, and is being executed by SPREP, together with the SPC and FFA.

ADB provided assistance in the negotiation of the 2000 international agreement on the conservation and management of tuna resources in the Central and Western Pacific Ocean mentioned above, which now serves as the basis for allocating fishery resources in this region and has provided an understanding of the various options in managing the region's fishery resources, particularly tuna. In 1999, ADB also provided technical assistance to help sort out difficult commercial and sustainability issues relating to the live reef fish trade.

In the area of reef conservation, the International Coral Reef Initiative Pacific Region Strategy was developed for 1998-2002 as a partnership between countries and regional organizations and focused on five priority strategies: (i) coastal management, (ii) capacity building, (iii) research and monitoring; (iv) coordination and review, and (v) mechanisms for implementation (SPREP 1996a). Gradual progress is being made on all of these fronts at the local level.

In 2002, a joint project on sandfish (*Holothuria scabra*) management was implemented jointly by the International Center for Living Aquatic Resources Management and SPC. The project, which will end in 2005, aims to determine the best strategies for releasing sandfish into the wild for purposes of restocking and stock enhancement of inshore fisheries for Pacific islanders.

Local Responses. ADB has supported the implementation of several PDMC projects on marine and coastal resource management as part of broader efforts to reduce poverty and establish the basis for economic growth. In the Cook Islands, a TA and loan on lagoon ecology monitoring and management carried out a study on population dynamics and modeling of black-lipped oysters in the Manihiki lagoon area. It also heightened pearl farmers' awareness of the need to carefully manage the lagoons to ensure their long-term productivity. A related 13-month advisory project was likewise successful in establishing government capacity to operate and maintain a pearl farm research and hatchery facility, and undertaking lagoon monitoring and management activities. Black pearls now are an internationally recognized export industry in the Cook Islands.

ADB assistance also has helped PDMCs to strengthen their marine and coastal conservation institutions, such as the Marshall Islands' Marine Resource Authority, PNG's Departments of Fisheries and Marine Resources and Environment and Conservation, and Solomon Islands' Department of Fisheries. Complementary ADB TA has centered on supporting the formulation of plans and policies in this sector, such as the FSM's Model State Fisheries Law and Tuvalu's Comprehensive Fisheries Action Plan.

Although no legislation in the Pacific is dedicated to conserving coral reefs at either the country or regional level, some national regulations governing fishery resources now include coral reef protection. Jurisdiction over coastal resource management is usually spread among several government departments, hampering effective responses. For example, in Kiribati more than 16 important laws relate to the protection of marine and coastal resources (Pulea and Farrier 1993). Traditional tenure systems remain strong and effective in some PDMCs (e.g., Fiji Islands and Vanuatu); customary systems are now being revived in others to complement state legislation for better management of marine resources (e.g., Cook Islands, Samoa, Solomon Islands, and Tuvalu).

The establishment of marine protected areas is increasingly viewed as an important option for conserving the ecosystems upon which coastal and marine life economic activity depends. For example, the Funafuti Conservation Area (FCA) of Tuvalu was set up in 1996 to better manage the country's principal atoll and lagoon system. This project was carried out with the support of the South Pacific Biodiversity Conservation Programme (SPBCP) of UNDP/GEF and administered by SPREP, in response to increases in fishing pressure and the threat of deteriorating environmental quality. The FCA is regarded by local residents as highly successful in improving fish stocks in adjacent areas of the Funafuti lagoon and preserving the island's biodiversity.¹¹

With respect to the issue of increasing the regional share of income from pelagic fisheries, the Samoa Fisheries Project, assisted by the Australian Agency for International Development (AusAID) has helped make that country's tuna industry its biggest export earner,

bringing in revenues of about \$20 million a year. A potential model for other PDMCs, this project has worked since 1991 to ensure the sustainability of Samoa's tuna fishery by formulating a management plan and training local fishermen in boat construction, safety, and proper handling and grading of tuna. The project also has helped to develop and conserve the country's village-based fisheries, with positive effects on the nutritional intake of the village people and reduced use of environmentally damaging fishing practices.

Other community-based coastal and marine conservation and management activities are being undertaken with New Zealand Agency for International Development (NZAID) assistance, such as the development of Avatiu Harbor in the Cook Islands. NZAID also supports efforts to improve training activities in the Maritime School of Kiribati's Manukau Institute of Technology and reef channel development and operational upgrading of Tuvalu's Maritime Training Institute.

Locally-managed marine areas (or LMMAs) is one promising approach in marine conservation. One of the most active countries applying LMMA is the Fiji Islands, and since its formation in 1999 the Fiji Locally-Managed Marine Area (FLMMA) network has grown to include communities in six districts and 10% of the country's inshore marine area. The benefits have been tangibly measured through increases in the number and size of clams, crabs, and other species harvested adjacent to taboo areas. Household incomes also have increased by 35% over the 3 years during which this approach has been applied, and economically important marine catches have tripled. Much of the success of the network can be attributed to its participatory and collaborative nature, which has put the local people at the center. The Fiji Islands have already incorporated many LMMA approaches into national policies, especially those designed to protect coastal resources. Because of this effort, FLMMA was awarded an Equator Initiative Prize at the World Summit on Sustainable Development.

Forest Resources

Current Status. In the forested Pacific islands, the loss of forest cover and forest degradation resulting from logging and conversion for agricultural production has become a major environmental problem in recent years. Contributing to habitat destruction, soil loss, reduced

¹¹ For a full description of the current status of this development-oriented conservation experiment, see the case study in the accompanying volume; a summary appears in Appendix 2.

water quality and the sedimentation of lagoon areas, these trends directly affect the livelihoods of the rural majority (and the poorest segments of society). A steady rate of deforestation is shown in Table 9 for Fiji Islands, PNG, Solomon Islands, and Vanuatu.

Forest cover varies greatly across the region, ranging from 40-85% of total land area in the high islands to 5-80% for lower islands and atolls. The economic value of these forests, in particular to Melanesian economies, is high and reasonably well documented (though data are not current). For example, PNG's forestry sector employed about 4% of the total workforce in 1995 and earned approximately \$312 million. In the same period, over 30% of the Solomon Islands workforce was employed by this sector, which contributed more than 50% of the country's total export earnings. Despite the recent decline in the Solomon Islands economy, logging proceeds at an alarming pace, accounting for a large proportion of the nation's meager revenues.

Along with the influence of increasing populations; breakdown of traditional management practices; introduction of new technologies; rising demand for fuelwood; and pressures from shifting agriculture, pastoral development and mining, logging continues to

be the leading cause of forest and tree cover decline. Once logging has occurred, many of these lands are converted to agricultural uses. Because most of the newly logged areas have steep slopes with thin soils, deforestation is a major cause of land degradation in the region.

Despite ongoing deforestation, PNG (see Box 1) and the Solomon Islands still have significant stands of high-value forests. The total value of forests—and the rich biological diversity and other environmental services they support—is immense (SPREP, 2000a). These resources remain crucial to sustaining the livelihoods of many in the Pacific by providing timber, other building materials (posts, fences, thatch, etc.), fuelwood, food, medicines, traditional and cultural materials, soil and water protection, and shelter.

Priority Issues. Work on improving forest and land use policy and legislation is progressing slowly in the region, and serious constraints retard the implementation and enforcement of existing regulations. In Melanesia, economic development strategies continue to emphasize extractive logging practices; only limited attention is being given to improving management systems so that the resource can become sustainable. In some cases, terrestrial biodiversity conservation efforts,

Table 9: Forest Statistics for Selected PDMCs

Country	Total Forest Area ¹ (ha)	Forest Area (% of total land area)	Annual Rate of Deforestation ² (Natural Forest) (ha)
Cook Islands	15,580	66.86	–
Fiji Islands	889,350	51.14	5,370
Kiribati	101,250	12.50	–
Micronesia, Fed. States of ³	48,259	68.84	–
Nauru	1,743	83.88	–
Papua New Guinea	39,300,000	85.02	80,000
Samoa	184,067	62.71	–
Solomon Islands	2,101,410	74.07	7,500
Tonga	4,000	5.35	–
Tuvalu	688	22.93	–
Vanuatu	487,319	39.70	1,600

Notes:

¹ = The total forest area covers all forest types including mangroves, dry and wet woodlands, and coconut and broadleaf forest areas.

² = Average rate of deforestation occurring through large-scale forest harvesting. Information on other land-use change through agriculture and resettlement is not available.

³ = Consolidated information for Chuuk, Kosrae, Pohnpei, and Yap.

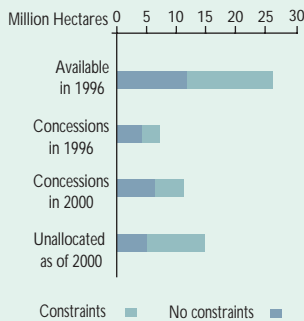
– = not available

Source: SPC 2000

Box 1: Forestry Scenarios in Papua New Guinea

Of the 26.5 million hectares (Mha) of forest area in Papua New Guinea, 7.1 Mha had been allocated to forestry operations by 1996. By the year 2000, this area had increased to 11.2 Mha. Although 14.8 Mha remained unallocated as of 2000, only 11.5 Mha of the national forest area were identified as suitable for forestry operations.

Area of Forestry Operations in Papua New Guinea



This means that much of the area currently in concessions is not suitable for industrial logging on the basis of sustainability or environmental protection, and a high proportion of the remaining forest areas is unsuitable for logging. With few exceptions, the vast majority of accessible and high volume forest has already been logged. The remainder, which forms the bulk of the unallocated estate, consists of remote, inaccessible, and economically marginal forest.

Source: Shearman. 2001.

particularly those relating to the establishment of parks and protected areas, are having some indirect positive influence on forest management. Even less attention is being paid to broader watershed management and/or reforestation policies or programs for larger islands. Despite some limited efforts at improvement, land use planning capacity remains very weak across the majority of Pacific countries.

Efforts to manage forest resources sustainably have concentrated on the basic planning and legislative levels; instead, they need to address a number of underlying root causes of deforestation and conversion relating to land governance and community development. Institutional capacity for forest and land management remains weak; overlapping mandates are frequent. In Melanesia, recent trends toward decentralization of control over natural resources have not been accompanied by the strengthened capacity at the provincial and district levels of government to handle complex forest management policies and practices. Without this capacity to govern effectively—and with only limited capacity to provide basic services and economic opportunities at the community level—landowners continue to be drawn to the financial opportunities offered by commercial timber companies.

Regional Responses. Starting with the Tropical Forest Action Plan, which was later replaced by initiatives of the 1992 World Summit in Rio de Janeiro and the 2002 United Nations Forum on Forests Initiatives, the Pacific began to develop techniques and instruments that would help improve management of its forests. Implementation has remained weak, however, due to lack of commitment and resources—although, despite the varied potential, economic, and socio-cultural conditions in the region, significant project-level progress has been achieved under a regional framework over the past decade.

Recent priorities for action have been well identified through meetings of the heads of the forestry sector and consultations at national and regional levels and include (i) policy and legislation, (ii) forest management, (iii)

forest product utilization, (iv) watershed management, (v) forest and trees in atoll ecosystems, and (vi) regional focal points and an information clearinghouse.¹² Details may be found in Appendix 4.

The Regional Forestry Program established in January 2000 and coordinated by SPC constitutes one initiative. The program provides a focal point for collaboration, coordination and implementation of projects and related regional initiatives in the region. Its key objectives:

- (i) Strengthen national capacity to formulate and implement sound forest policies and practices that achieve sustainable forest management, improve utilization of timber and nontimber forest products, and conserve endangered species and biodiversity;
- (ii) Promote the application and adoption of multiple land-use systems such as agroforestry and traditional forest-related knowledge, including nontimber forest products and appropriate technologies for rural-based communities;

¹² The list of priority areas for action are taken from the Pacific Regional Submission to the 8th Session of the United Nations Commission on Sustainable Development on Integrated Planning and Management of Land Resources (forestry sector attachment) (compiled in PIFS 2000a).

- (iii) Encourage community awareness and participation in the management, utilization, and protection of remaining forest, water catchment areas, and littoral forests; and
- (iv) Provide a focal point for advocacy, collaboration, information dissemination, and resource mobilization.

Two projects currently operating under the Program are (i) the AusAID-funded Forests and Trees Project, and (ii) the SPC/Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ)-Pacific German Regional Forestry Project. In addition, the Program also works closely with other regional projects, initiatives, and organizations in pursuing its goals. It has formal memoranda of understanding with the South Pacific Regional Initiatives on Forest Genetic Resources and the Regional Forests Health Surveillance Project. Other collaborators include the United States Department of Agriculture (USDA) Forest Service, Centre de Cooperation Internationale en Recherche Agronomique pour le Developpement-Forêt, USDA Natural Resource Conservation Service, and the Food and Agriculture Organization's (FAO) Subregional Office for the Pacific Islands.

Numerous workshops have been held in the region with support from the European Union, AusAID, SPC, and GTZ to build capacity in sustainable forest management and to raise awareness about the certification of timber products. Fiji Islands, Samoa, Solomon Islands, and Vanuatu have formed national working groups to develop criteria and indicators for improved forest management and to open opportunities for industry to adopt certification. In 2002, the AusAID Program on Forests (now with World Bank), Pacific Islands Forum Secretariat (PIFS), SPC, and GTZ supported a workshop to link the Pacific to the initiatives of the United Nations Forum of Forests and to promote the development of national forest programs in the region.

Local Responses. With the vast majority of forests in the Pacific legally owned and controlled by local communities based around traditional clan structures, local responses are of particular relevance. PNG, 95% of whose forested land is under customary ownership, is a case in point. In an attempt to address the challenges of community development and strengthened local-level governance, the Almami Local-Level Government in the Bogia District of Madang Province has constructed an enforceable legal framework within which clans and communities can

prepare plans and agreements with one another for forest conservation. Through the legislative powers of Section 44 of the Organic Law on Provincial Governments and Local-Level Governments and the relevant sections of the Local-Level Governments Administration Act 1997, the Almami Local-Level Government aims to protect and conserve the forest resources of the Adelbert Ranges, and also to facilitate compatible economic growth in the area. By linking community agreements to national legislation in this way, it is helping to protect and make more enduring the decisions taken by the clan members and local-level government.

From 1990 to 1994, the Fiji Islands Forestry Department, with assistance from the German Government, developed a sustainable natural forest management regime, including verification indicators, on a pilot project basis. From 1994 to 2001, the SPC/GTZ-Pacific German Regional Forestry Project developed this model further in selected Pacific countries, to prove it could be adapted to the growth dynamics of various natural forest ecosystems in the region with only minor modifications. The project developed mechanisms that allowed the active involvement of local resource owners in forest management.

In 1994, the PIFS decided to facilitate the introduction of a logging code in the region. The Fiji Islands started implementing its National Logging Code in 1990 with assistance from the International Labour Organisation. Australian aid supported the Solomon Islands, PNG, and Vanuatu in developing their national codes. The Logging Code in Samoa also was assisted through AusAID and SPC/GTZ, while Niue developed its code just recently, facilitated by SPC/GTZ. In most countries implementation faces significant problems and continues to need appropriate external support.

With regard to the formulation of national legislation, Vanuatu drafted its own Forest Policy in 1996 with AusAID assistance. This was later reviewed with support from FAO. Vanuatu has expressed interest in developing a forestry sector plan under the SPC/GTZ Project to further improve its planning tools. SPC/GTZ likewise has assisted in formulating a Forest and Agroforestry Policy for Niue and in drafting a Rural Land Use Policy for the Fiji Islands, which favors stronger land-use planning as an important tool to ascertain the best use of the resources. The Forestry Department of the Fiji Islands is in the process of reviewing its current Forest Policy and Legislation.

In the Cook Islands, the SPC/GTZ Project will support development of a management plan for its pine plantations as well as improved land-use planning. The planting of sandalwood trees as a future income opportunity also will be explored.

In Samoa, the Ministry of Agriculture, Fisheries, Forestry and Meteorology (MAFFM) has historically operated under a rather top-down management approach, with weak internal and external communications and strategic focus. AusAID helped implement a project to help MAFFM realign its organizational and management systems and procedures. The project's goal is to increase the ministry's capacity to help people improve their food and resource security, and to generate ecologically sustainable income and employment opportunities within the agriculture, fisheries, and forestry sectors. Now that MAFFM has completed a new 3-year corporate plan (2002–2005), Australia is considering further assistance to strengthen its policy development capacity. With support from FAO, Samoa will soon conduct a national inventory of its forest resources, with the goal of banning commercial logging. Samoa intends its forestry policy to become more community-based in the future.

The first Pacific forest areas to be certified as being sustainably managed (through the project activities of NGOs) are in Solomon Islands and PNG. There is growing interest in certification, and such ecolabeling efforts could be important in the future. PNG has developed criteria and indicators appropriate at least to Melanesian forests and has submitted them to the certifying body, the Forest Stewardship Council, for endorsement. Another initiative in Solomon Islands, with AusAID support, is assisting the Forestry Division of the Ministry of Forestry, Environment and Conservation to strengthen its organizational development and industry monitoring and improve the forest management infrastructure. In addition to these ongoing activities, future work will focus on policy and legislative reform to improve ministry operations and industry practices and to support community reforestation. So far, the Solomon Islands project has (i) increased log export duties due to improved log shipment monitoring, (ii) constructed and refurbished operational infrastructure in four provinces, (iii) provided operational and logistical support to office and field activities, and (iv) implemented a new customary reforestation scheme.

Solomon Islands has been implementing an ecoforestry program since 1993 whose objective is to

strengthen the quality of village living through conservative and sustainable utilization of the nation's forest wealth. The project, which is a joint initiative of the Solomon Islands Development Trust, Greenpeace Australia Pacific, and the Imported Tropical Timber Group of New Zealand, has trained 56 landowning groups across the country and has provided ongoing extension support services and monitoring to ecotimber producers. Aside from financial return, the greatest benefit of the project is the re-emergence of the traditional approach of villagers working together that has resulted in better understanding and good relationships among community members.

Finally, in Tonga, NZAID since the 1970s has supported the establishment of a forestry plantation on 'Eua to provide a viable and sustainable source of income for the people of 'Eua and Tonga in general. In the near future, the SPC/GTZ project will also assist Tonga in reviewing its agroforestry master plan and policy.

Waste Management and Urbanization

Current Status. Rising problems of urban pollution management and waste disposal are common to most PDMCs. Growing urban and periurban populations combined with the often limited land area available for waste disposal—complicated by the physical structure of many islands—has led to growing health concerns and increased negative impact on economic sectors such as tourism.

The contamination of surface and groundwater resources from sewage as well as animal waste and household garbage is having a significant impact on the quality of often limited supplies of freshwater. Table 10 shows that in Apia, Samoa, and Suva, Fiji Islands, over 90% of respondents to a waste awareness survey indicated that waste disposal was a problem. Approximately 69% of respondents in Tarawa, Kiribati, felt the same way; more than one third of respondents there identified the sea as an acceptable place for disposal of solid waste.

The past decade has witnessed a significant increase in investments to deal with waste management. Across the region, PDMCs—often with ADB assistance—have implemented projects to help governments and communities better handle sewage and solid waste. During this period, considerable expansion of water supply systems has also taken place, partly in response

Table 10: Waste Awareness Baseline Survey

Answers to: Is uncontrolled waste disposal becoming a problem in your city or town? (in %)				
City	Yes	No	No Answer	Total
Suva, Fiji Islands	91.6	5.4	3.0	100
Apia, Samoa	90.1	7.6	2.3	100
Tarawa, Kiribati	68.8	29.0	2.2	100

Source: SPREP and European Union 2000.

to groundwater contamination. Policy and institutional reforms to improve the efficiency with which waste management services are financed and provided have paralleled these environmental infrastructure investments. These changes have ranged from the creation of new urban planning or wastewater treatment authorities to the calculation and imposition of appropriate tariffs on beneficiaries to cover the costs of providing these services.

Because of the unique place they hold in the region's history, nuclear wastes also remain of special concern. The South Pacific was declared a nuclear-free zone by a 1986 treaty, and strong sensitivities remain about the retained nuclear residues in such places as the Bikini Atoll.

With respect to other urban environmental management issues, urbanized populations are still small in both their absolute size and in terms of the proportion of Pacific populations they represent: on average, only one in four people lives in an urban environment. However, urban population growth is outstripping rural by a wide margin in almost all PDMCs, and these areas are almost exclusively located along coasts. In some Pacific countries, urban areas contain more than half of the population, resulting in severe environmental management problems. For example, in the Marshall Islands significant adverse environmental impacts are concentrated in the urban center of Majuro, with seven areas of the Majuro lagoon having been declared unsafe for swimming or fishing due to high fecal coliform counts.

The expanded area of built environments—and the associated evolution of the nature of human settlements in the Pacific—thus represents one of the most significant trends and challenges facing the region over the next decade. This is particularly true for the largest cities of the region, where problems include (i) rising land prices and conflicts over “traditional” versus “modern” land

tenure; (ii) falling standards of infrastructure in newly urbanized areas; (iii) an increase in the number of squatter settlements and informal housing; and (iv) poverty, vulnerability, and environmental degradation.

Priority Issues. The major factors contributing to waste management problems and the continuing degradation of urban areas are high population growth rates (Table 11) industrialization, urbanization, and consumerism. Rural populations seeking jobs and a better life are drawn to urban areas, often as a prelude to later relocation outside the country. The degradation of natural systems (e.g., coastal ecosystems and forests) that form the basis of rural livelihoods also is pushing some to seek better opportunities in the region's cities. Urban manufacturing, power generation, the provision of services and infrastructure, and other economic activities create waste and pollution and encroach on beaches, wetlands, and forests. While air pollution is not yet a significant problem in the region's cities, a number of pockets have emerged where vehicular pollution is beginning to present air quality management issues.

Increased urbanization also creates demand for the expansion of infrastructure, such as wastewater collection and treatment, solid waste management, power supply, communications, and transportation services. As already indicated, inadequate sewerage has severe health and environmental implications, because it leads to degradation of surface, subsurface, and coastal water quality, with adverse effects on human health as well as recreational and commercial fishing activities, especially the safe harvesting of shellfish from the littoral zone. Increased demand for port facilities from widening regional and global trade also directly affects coastal environments. Altered wave and coastal current patterns due to coastal development can have unpredictable and costly consequences for beach deposition and erosion.

Table 11: Urban Population and Growth Rates in PDMCs

Country	Urban Population (%)	Population Growth Rate (%)
Cook Islands	59	0.6
Fiji Islands	46	2.6
Kiribati	37	2.2
Marshall Islands	65	1.8
Micronesia, Fed. States of	27	0.4
Nauru	100	1.8
Papua New Guinea	15	4.1
Samoa	21	1.2
Solomon Islands	13	6.2
Tonga	32	0.8
Tuvalu	42	4.8
Vanuatu	21	4.3

Sources: SOPAC 2002b, SPC 2002a.

Table 12 shows that the PDMCs' average rate of waste generation has been steadily increasing (with the exception of Tuvalu). A large portion of the waste stream is organic in nature, as much as 60% of total content. However, as traditional lifestyles change, a growing volume of imported packaged goods requires disposal (or recycling), including plastics, paper, and metal (mostly cans). As these enter the waste stream (in the absence of re-use options), they are harder for solid waste management services to handle, and this is expected to become an increasingly critical environmental challenge throughout the region. In addition, large metallic items such as old cars, trucks, and buses and disused construction equipment are most difficult to dispose of in small landfills and are often abandoned or left to rust in open dumps.

Groundwater and surface water contamination from past disposal sites of persistent organic pollutants (POPs) also presents a challenge for PDMCs. In some areas, military equipment and vessels dumped in the ocean at the end of World War II are now causing problems with oil leaks and unexploded ordnance. Table 13 identifies a wide range of chemicals and the extent to which site contamination may be a problem in the region.

As indicated in the section on water resources above, improvement of wastewater management is essential to bettering health and living standards in the Pacific.

Table 12: Generation of Waste in Selected PDMCs

Country	Past Years kg/person/day (year)	2000 kg/person/day
Fiji Islands	not available	0.94
Kiribati	not available	0.33
Solomon Islands	0.38 (1991)	0.62
Tuvalu	0.60 (1996)	0.43
Vanuatu	0.60 (1996)	0.65
Papua New Guinea	0.30 (1985)	0.41
Tonga	0.70 (1994)	0.82
Samoa	0.52 (1993)	0.86

Source: SPREP 2000.

Wastewater is defined as any combination of discharge (liquor/effluent, sludge/biosolids) into the environment, with or without treatment, and includes human excrement, effluent, flushing water, industrial water, and storm runoff. Positive socioeconomic benefits can be expected from all wastewater management improvements, including increased economic productivity, children's health and school attendance, and reduced damage to coastal fisheries and the coastal tourism industry from pollution.

Regional Responses. Unlike many other environmental challenges in the Pacific, the problems of urbanization have not yet generated regional strategies or responses, except for wastewater management. A Regional Wastewater Management Meeting was held in 2001 in Majuro that brought together representatives from 15 Pacific island countries and resulted in the formulation of the Pacific Wastewater Policy Statement and the associated Pacific Wastewater Framework for Action. The former sets out a framework of guiding principles and policies to direct future development and cooperation among Pacific nations, while the latter comprises a list of proposed actions to be undertaken at national and regional levels to achieve the goals laid out in the Policy Statement. The Pacific Wastewater Policy Statement is guided by the following five principles:

- (i) *National wastewater management policies and regulations will be appropriate and acceptable to the people and cultures of the Pacific islands.* Governments are required to place high priority on wastewater and sanitation issues in order to

Table 13: Contamination by POPs in Pacific Island Countries (not including PNG, French, and US Territories)

Category	Estimated Quantity
Agricultural Chemicals (including DDT)	130 tons
Potentially PCB-Contaminated Transformer Oil	220,000 liters
Pesticide-Contaminated Sites	21
Bitumen-Contaminated Sites	8
Oil- and Diesel-Contaminated Sites	29
CCA-Contaminated Sites	7
Potentially Contaminated Solid Waste Disposal Sites	20

PNG = Papua New Guinea, POPs = persistent organic pollutants, DDT = Dichlorodiphenyltrichloroethane, PCB = Polychlorinated biphenyl, CCA = Chromated Copper Arsenic.

Source: SPREP, UNEP, and European Union 1999.

direct sufficient attention and resources to these areas in national development plans. Regional and national policies should define responsibilities, leading to better cooperation between agencies and increased recognition of the linkages between good sanitation, improved public health, economic development, and a cleaner environment. An updated and consistent regulatory framework, combined with effective enforcement, will result in compliance with good practices, reduced pollution, equitable allocation of resources, and increased investment.

- (ii) *Appropriate national institutions, infrastructure, and information will support sustainable wastewater management. Clearly defined responsibilities for all stakeholder organizations in wastewater management can prevent fragmented and uncoordinated plans and actions and improve linkages to other sectors.* A specific national agency responsible for wastewater management can be considered to enhance performance. Strengthened institutional capacities and the collection and dissemination of data and information will support appropriate technology selection, increase system performance, increase the understanding of subsequent environmental and public health impacts, and demonstrate the need for water conservation and natural disaster preparedness.
- (iii) *Better access to funding will improve service delivery and develop the private sector.* Adequate government financial support, alternative financing mechanisms, and improved internal cost recovery are prerequisites to sustain maintenance and attract external investment.

(iv) *Community participation in wastewater management and sanitation will ensure equitable benefits with recognition of sociocultural sensitivities.* Wastewater management and sanitation issues should receive a higher public profile. Public awareness by the community of sociocultural, economic, environmental and public health impacts on wastewater management will ensure ownership.

(v) *Viable and sustainable levels of skilled and knowledgeable people within the wastewater sector and communities will improve wastewater management.*

Appropriately trained and experienced urban and rural wastewater professionals are needed to develop projects and operate facilities, at both the technical, managerial, and community participation levels. Increased training enables communities and individuals to take responsibility for operating and maintaining their systems.

Several high-priority responses were identified in the Framework for Action, but all of them are anchored and preconditioned on the achievement of conditions listed above.

Local Responses. Urban infrastructure is being upgraded and expanded across the Pacific, and ADB is playing a significant role in financing such investments. Many of these infrastructure improvements are directly related to better environmental management, including liquid and solid waste management. Efforts are increasing to strengthen the capacity of urban planning authorities (as in Samoa) to better link them with agencies and organizations responsible for providing urban services, and to mainstream environmental management capacity into these agencies. This is a tremendous institutional challenge in many PDMCs, but it is essential to the process of rationalizing urban development and expanding the availability of services.

A widening range of experience with urban waste management is being gained from actions implemented by communities as well as state-sponsored efforts, and they have in common the use of market-based approaches. In South Tarawa, Kiribati, discarded glass bottles are often reused to store red toddy (*kamwaimwai*), and some plastic items (such as ice cream containers) as

well as aluminum cans are used as water containers or even as decorations. Composting of plant material also is used in the cultivation of swamp taro (*bwabwai*) (SPREP and European Union 2000).

A more comprehensive approach to recycling can be seen in the Fiji Islands, where significant economies of scale make recycling more commercially attractive. Coca-Cola has supported the collection of polyethylene terephthalate bottles in Lautoka and Nadi. Although this scheme could be improved, bottles are being collected and sent to Australia for recycling. Lautoka City Council has been working to involve schools in the collection of PET bottles by offering a 1–2-cent refund per bottle. The use of such economic incentives is also largely responsible for the success of beer bottle recycling by Carlton Brewery. Most metals can be recycled in the Fiji Islands through three scrap metal businesses operating in Lautoka: Scrap Metal (Fiji) Ltd., Waste Recyclers Ltd., and IA Traders. Metals recovered include copper, aluminum, brass, zinc, lead, and stainless steel as well as selected items containing hazardous substances such as batteries, air conditioners, and radiators. However, the market price of steel has been too low to make the export of recycled scrap metal financially viable. Paper and cardboard also are recycled; Waste Recyclers Ltd. collects the material and sends it to Suva for baling and eventually to Australia (SPREP and European Union 2000).

Local recycling options, however, regularly confront the constraint of a low ability to pay for such services. In Solomon Islands, for example (and particularly in the current climate of civil unrest), the Honiara Town Council is unable to charge for residential waste collection (SPREP and European Union 2000). But several PDMCs have

implemented approaches to waste collection and disposal that have successfully integrated state intervention and the use of market incentives. In Tonga, for example, the Ministry of Health spends about T\$60,000 per annum on waste management, mainly for waste collection and maintenance of the Nuku'alofa rubbish dump. Most of this is assumed to come from government revenues, because the fees charged for waste collection (shown in Table 14) are so low.

By contrast, solid waste collection—as well as operation and maintenance costs for the landfill—in Vanuatu is funded by property taxes as well as waste collection charges and tipping fees for commercial landfill users. The user pays principle is being applied in an attempt to ensure that the collection and disposal system is self-financing. The fees, introduced in 1998, are shown in Table 15.

A final example may be drawn from recent experience in the Marshall Islands, where residents and officials of Majuro have grappled with that city's growing solid waste management challenges. Indiscriminate disposal of solid waste on land and in the sea has been occurring for decades. An ADB-sponsored effort has been exploring the application of traditional environmental management practices to these problems by recognizing, for example, that traditional land managers (*alaps*) have a critical role to play in improving the city's solid waste management system. The *alaps* recently prepared their own solid waste management action plan and are looking to form an association to better promote their role in overall environmental management. Traditional leaders and various government agencies and NGOs have become united in their efforts to solve Majuro's solid waste problems.

Table 14. Waste Collection Charges in Tonga

Waste Source	Number	Rate per Month (T\$)	Rate per Year (T\$)
Private Home and Office	951	0.5	5,706
Schools and Stores	79	1.00	948
Restaurants, Motels/Hotels, Guest Houses	41	1.50	738
Whole Store Industries	31	2.00	744
Total		8,136	

Source: SPREP and European Union 2000.

Table 15. Waste Collection and Disposal Charges in Vanuatu

Waste Source	Collection Fee per Year (Vatu)
Household	6,000
Commercial Waste	9,000
Restaurant	60,000
Big Shop	120,000
Hotel	180,000
Hotel Outside Municipal Boundary	360,000
Hire of Small Skip	2,500 per load
Hire of Large Skip	3,500 per load
Long-Term Hire	15,000 per month
Hire of Small Skip (outside municipal boundary)	5,000 per load
Hire of Large Skip (outside municipal boundary)	7,500 per load
Size of Load	Tipping Fee per Trip/Dump (Vatu)
Small vehicle	100
Hilux	200
Truck	300
Desludger	1,500

Source: SPREP and European Union 2000.

Biodiversity

Current Status. The natural heritage of the Pacific islands region is the richest and most diverse in the world. There are more rare, endangered, and threatened species per capita here than anywhere else on earth: up to 3,000 species may be found on a single reef. Their marine environment constitutes an enormous and largely unexplored resource, including the most extensive and diverse coral reef systems found on the planet, the globe's largest tuna fishery, the deepest oceanic trenches, and the healthiest remaining populations of many globally threatened marine species including whales, sea turtles, dugongs, and saltwater crocodiles. Its high islands support large blocks of intact rainforests, including many species and communities of terrestrial plants and animals found nowhere else. This same biodiversity, however, is

also among the world's most fragile and threatened: an estimated 50% of it is at risk of being lost forever.¹³

The diversity of ecosystems and species is greatest in Melanesia, and falls somewhat from west to east and from north to south away from the equator. But even where diversity is relatively lower, species endemism and the threats of extinction often remain very high (Table 16).

These natural systems underpin both the formal and subsistence economies of the region. Natural resource-based sectors, such as fisheries, forestry, and agriculture, rely on sound management of biological resources for their sustainability; the tourism sector is also largely dependent on local ecosystem integrity and diversity. The livelihoods of most Pacific islanders, therefore, are either directly or indirectly derived from the maintenance of biological and other natural resources, so that biodiversity conservation should be considered central to social and cultural development.

Unfortunately, this viewpoint is not widely shared among policymakers, or even those directly dependent upon natural systems for their livelihoods. Critical threats to the region's biological diversity continue to arise from natural resource-based economic activities that do not take adequate account of their adverse impact on natural systems and place undue strain on their stability and sustainability. These pressures are particularly evident in the overharvesting of commercially valuable products from natural systems. Marine pollution by land-based sources (such as eroded soils, pesticides, heavy metals, nitrates, and chlorinated hydrocarbons) also constitutes a principal threat to marine biodiversity, along with habitat destruction/degradation (including fishing by dynamiting). Other notable sources of stress on both terrestrial and marine biodiversity include invasive species and the effects of climate change and increased climatic variability—especially rising sea levels and the greater frequency and intensity of cyclones. These threats were summarized during the 7th Pacific Islands Conference on Nature Conservation and Protected Areas, which evaluated the protection needs facing various ecosystems and organisms (Table 17 and Box 2) (Thaman 2002).

¹³ Background paper distributed during the 7th Conference on Nature Conservation and Protected Areas held 8–12 July 2002 in Rarotonga, Cook Islands.

Table 16: Biodiversity Indicators in PDMCs and Related Land Use Statistics

Country	No. of Protected Areas	Protected Land Area (km ²)	% Land Protected	No. of Threatened Animals		No. of Threatened Plants		Total Known Mammal Species	Threatened Mammal Species	Total Known Bird Species	Threatened Bird Species
				App I	App II	App I	App II				
Cook Islands	5	3.6	2.0	4	56		5				
Fiji Islands	23	456.6	2.0	10	226		41	4	5	74	12
Kiribati	12	587	86.0	2	132				0		4
Marshall Islands	1	11.3	6.0	3	266				1		1
FSM	16	106.3	15.0	9	116		31		6		5
PNG	45	15,566	3.0	13	662	7	253	214	58	644	32
Samoa	7	114.8	4.0	6	23		33	3	3	40	7
Solomon Islands	12	119	1.0	11	188	1	113	53	21	163	23
Tonga	11	47.1	7.0	5	87		7		1		3
Tuvalu	1	8	32.0	2	73						
Vanuatu	8	34.7	.002	7	440		44	12	4	76	7

km² = square kilometer; FSM = Federated States of Micronesia; PDMC = Pacific developing member country; PNG = Papua New Guinea.

App I = Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Species under this category are the most endangered among CITES-listed animals and plants. These are threatened with extinction and CITES generally prohibits commercial international trade in specimens of these species.

App II = Appendix II of CITES. Species under this category are not necessarily threatened with extinction now but may become so unless trade is closely controlled.

Source: CITES (<http://www.cites.org>), SPREP 1999, and World Bank 2002.

Priority Issues. The Regional Action Strategy for Nature Conservation (2003–2007) that emerged from this Conference identifies six important challenges to environmental management and biodiversity conservation in the region: (i) shortcomings in institutional capacity (especially at national levels), (ii) limited infrastructure development, (iii) lack of coordination and integration of environment and conservation activities, (iv) limited economic alternatives to unsustainable exploitation, (v) lack of political support and good governance, and (vi) limited funding (Thaman, 2002).

Little progress will be made if biodiversity conservation continues to be viewed as an “environmental” issue unconnected to the economic well-being of the region. Clearly, the future of Pacific economies and the Pacific way of life is heavily dependent upon sustaining the vital natural resource systems that serve as storehouses for biological diversity. Conservation efforts must begin from this premise and directly contribute to the reduction of poverty, enhancing food security, and providing obvious links between the establishment of sustainable livelihoods and the protection of species and ecosystems. This is fundamental to the mainstreaming of environmental considerations—including conservation—at the national and regional levels.

International willingness to contribute to Pacific environmental management and conservation work opens a range of new opportunities. Emphasis is increasingly being placed on the identification and establishment of local resource use patterns that support sustainable local livelihoods, including the promotion of market-based alternatives with environmentally friendly or sustainable development business enterprises.

Regional Responses. According to an ADB-sponsored survey, the proportion of countries reporting biodiversity loss as a serious problem rose from 67% in the 1970s to 75% in the 1980s (though this could have been partly attributable to rising awareness). During the 1990s, considerable effort went into addressing these concerns, with the main response being expansion of the system of parks and protected areas in the region. Analysis and conservation planning activities also accelerated. According to the Regional Action Strategy for Nature Conservation, a significant increase has been seen in the total area of natural systems brought under conservation management (SPREP 2002a). The area under protection is impressive, with 232 protected areas covering 25,500 km². Five countries have dedicated part of their EEZs to marine conservation, with a total area of 10.9 million km² or one third of the total EEZs of all Pacific islands, designated as whale sanctuaries. A

Box 2. Threats to Biodiversity and Biodiversity Conservation

DIRECT THREATS TO BIODIVERSITY

1. High Frequency of Extreme Events/Natural Disasters
2. Global Warming/Eustatic Sea-Level Rise
3. Stratospheric Ozone Depletion and Increasing Ultraviolet B Radiation
4. Breakdown and Simplification of the Species Composition and Trophic Structure of Terrestrial, Freshwater, and Marine Ecosystems and Ecosystem Functions
5. Degradation of Uninhabited Islands
6. Upland and Inland Deforestation and Forest Degradation
7. Coastal and Mangrove Deforestation and Degradation
8. Degradation of Freshwater Resources and Ecosystems
9. Agricultural Simplification and Degradation, Agrodeforestation and the Loss of Biodiversity in Agricultural Systems
10. Overgrazing and Degradation of Biodiversity by Domestic Livestock
11. Destruction due to Feral Animals
12. Alien Invasive Plants and Animals
13. Pest and Disease Infestations and Epidemics
14. Soil Degradation and Accelerated Soil Erosion
15. Fire
16. Destruction and Degradation of Productive Marine Ecosystems and Disruption or Change in the Dynamics of Marine Ecosystems
17. Overuse/Overexploitation/Unsustainable Use of Terrestrial Plant and Animal Resources
18. Overfishing/Overexploitation/Unsustainable Use of Marine Resources
19. Use of Destructive Fishing Technologies
20. Illegal Fishing
21. Pollution of Freshwater Resources
22. Air Pollution
23. Marine Pollution
24. Indiscriminate and Increasing Use of Pesticides
25. Hazardous/Toxic Waste Disposal
26. Nuclear/Radioactive Pollution and Contamination

SOCIAL, INSTITUTIONAL, AND INFRASTRUCTURAL THREATS

1. Uncontrolled Population Growth
2. Loss of Traditional and Contemporary Ethnobiological Knowledge
3. Breakdown in Traditional Diversified Subsistence Economy
4. Inadequate Modern Scientific Baseline Knowledge of the Nature and Status of Biodiversity
5. Inadequate Systems of Marine and Terrestrial Conservation Areas
6. Inadequate Capacity to Deal with Terrestrial, Freshwater, and Marine Invasive Species
7. Inadequate Legislation/Legal Instruments
8. Inadequate Infrastructure/Capacity for Biodiversity Conservation
9. Inappropriate Modern Education and Curricula
10. Rapid and Uncontrolled Urbanization
11. Unforeseen Large-Scale Developments
12. Free Trade/Globalization and Increasing International Free Trade in Biodiversity
13. Poverty and Economic Deterioration
14. Gender Inequity in the Control, Use, and Management of Biodiversity
15. Political Instability and Political Ignorance or Lack of Political Will to Commit to Conservation

Source: Thaman 2002.

Table 17. Protection Needs for Ecosystems and Organisms in the Pacific Region

Category	Melanesia	Polynesia	Micronesia
Ecosystems			
Uninhabited islands	++	+++	+++
Coastal littoral and mangrove forests	++	+++	+++
Lowland forests	++	+++	+++
Montane/cloud forests	++	++	++
Rivers and lakes	+++	+++	+++
Wetlands/swamps	++	+++	+++
Shifting agroforestry lands and agroforests	++	+++	+++
Semi-permanent/intensive agricultural areas	++	++	+++
Houseyard and village gardens	++	++	+++
Selected productive reefs	+++	+++	+++
Intertidal zone and sea grass beds	++	+++	+++
Reef passages	++	+++	+++
Coral reefs	+++	+++	+++
Terrestrial Organisms			
Native coastal and mangrove plants	++	+++	+++
Native inland trees and plants	++	+++	+++
Cultivated trees and plants	++	+++	+++
Plant cultivars/varieties	++	+++	+++
Native insects/arthropods	++	+++	+++
Land crabs	++	+++	+++
Native molluscs	++	+++	+++
Other native invertebrates	++	+++	+++
Native amphibians	+++	NP	+
Native reptiles	+++	++	++
Native birds	+++	+++	+++
Native mammals	+++	+++	+++
Humans (ethnobiological knowledge)	+++	+++	+++
Freshwater Organisms			
Freshwater plants	++	+++	+++
Crustaceans	++	+++	+++
Shellfish	++	++	++
Insects	+++	+++	+++
Finfish/eels	++	+++	+++
Amphibians	++	NP	NP
Reptiles	+++	+	+
Marine Organisms			
Seaweeds (marine macro-algae)	++	++	++
Sea grass	+++	+++	+++
Stony reef-forming corals	+++	+++	+++
Shellfish (giant clams, trochus, turban snail, pearl oyster, triton)	+++	+++	+++
Bêche-de-mer/holothurians	+++	+++	+++
Crabs, lobsters, mantis shrimp	++	+++	+++
Reef and lagoon fish	++	++	++
Eels (conger, moray)	++	++	++
Large demersal finfish (rockcods, wrasses, parrotfish)	+++	+++	+++
Sharks and rays	++	+++	+++
Billfish	+++	+++	+++
Turtles	+++	+++	+++
Crocodiles	+++		+
Sea birds	+++	+++	+++
Mammals (whales, dolphins, dugongs)	+++	+++	+++

Legend: +++ = of serious widespread concern and in need of immediate protection; ++ = of some widespread concern or of serious concern in specific areas; + = of limited or localized concern; NP = not present.

Source: Thaman 2002.

regional Wetlands Action Plan was adopted in 1999, while a regional Invasive Species Strategy was endorsed in 2000. An apparent shift has also occurred in community-based conservation schemes, which are more appropriate and acceptable in the Pacific because of sociocultural norms.

Another important achievement was the launching of the Pacific Islands Roundtable for Nature Conservation in 1998, in response to the call of the 6th South Pacific Conference on Nature Conservation and Protected Areas. The Roundtable serves as a venue to encourage more effective conservation action in the Pacific by (i) fostering greater coordination and collaboration among regional and international organizations; (ii) providing feedback on the effectiveness of conservation activities through monitoring and evaluation of the Regional Action Strategy; (iii) identifying and addressing critical gaps in regional conservation activities; and (iv) recruiting new partners for Pacific island conservation.

Local Responses. All PDMCs are now parties to the Convention on Biological Diversity (CBD), though they are at different stages of fulfilling their obligations to the Convention (Table 18). Six countries have already completed their national biodiversity strategy and action plans (NBSAPs), four are in progress, while two have just submitted their proposals. In Samoa, the NBSAP Coordinating Committee is actively working across sectors to promote conservation and sustainable development. Seven countries have submitted both their first and second national reports to the Convention, two have prepared thematic reports on forest ecosystems (Samoa) and on protected areas (Tonga).

Unlike the widespread participation in activities under CBD, only three Pacific countries are members of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES): Fiji Islands, PNG, and Vanuatu. Details of their membership are in Tables 18 and 19.

Table 18: PDMC Membership in CBD and Compliance with CBD Obligations (as of April 2003)

Country	Membership		Obligations			Thematic Report
	Signed	Ratified	National Biodiversity Strategy and Action Plan	First National Report	Second National Report	
Cook Islands	12/06/1992	20/04/1993	✓			
Fiji Islands	09/10/1992	25/02/1993	✓	✓	✓	
Kiribati		16/08/1994	✓	✓		
Marshall Islands	12/06/1992	08/10/1992	✓	✓	✓	
Micronesia, Federated States of	12/06/1992	20/06/1994	✓	✓	✓	
Nauru	05/06/1992	11/11/1993				
Papua New Guinea	13/06/1992	16/03/1993				
Samoa	12/06/1992	09/02/1994	✓	✓	✓	✓ (Forest Ecosystem)
Solomon Islands	13/06/1992	03/10/1995		✓	✓	
Tonga	Not Available	19/05/1998				✓ (Protected Areas)
Tuvalu	08/06/1992	20/12/2002				
Vanuatu	09/06/1992	25/03/1993		✓	✓	

CBD = Convention on Biological Diversity
Source: CBD 2003.

Table 19. PDMC Membership in Convention on International Trade in Endangered Species of Wild Fauna and Flora

Country	Order of Entry into Force	Date of Accession	Date of Entry into Force
Fiji Islands	143	30/09/1997	29/12/1997
Papua New Guinea	21	12/12/1975	11/03/1976
Vanuatu	101	17/07/1989	15/10/1989

Source: CITES 2003.

The expanded protection of natural heritage or biologically rich areas using community-based conservation approaches must be considered one of the greatest recent successes. Established community-based conservation areas range in size and scope from the 2–5 hectare (ha) marine reserves in Samoa and Cook islands (*raui*), to the 100,000-ha Baura Highlands Conservation Area in Solomon Islands, to the 900,000-ha Milne Bay Conservation Project in Papua New Guinea. In total, community-based conservation approaches are now being applied to manage more than 3.5 million ha of rainforests, mangroves, reefs, coastal waters, and other valuable island ecosystems throughout the Pacific. Though impressive, these figures are low relative to the need, and many areas remain unsurveyed and undefined. SPREP, through the International Waters Program (IWP), has prepared an inventory of Marine Protected Area (MPA) activities in IWP-participating countries that provides a synopsis or overview of conservation initiatives undertaken by these MPAs (SPREP 2002).

PNG leads the region in conserving and protecting wetlands, as the only country that is party to the Convention on Wetlands. Signed in Ramsar, Iran, in 1971 and also known as the Ramsar Convention, it is a global intergovernmental treaty on wetlands conservation which recognizes wetlands as ecosystems that are extremely important for biodiversity conservation in general and for the well-being of human communities. Two of PNG's important wetland sites are under the Convention's management: the Tonda Wildlife Management Area and Lake Kutubu. Two more sites are now being prepared for nomination under the Convention. Other countries like Fiji Islands, Solomon Islands, and Samoa have already signified their intention to accede to the Convention, because they also have wetland areas needing immediate conservation and protection.

The Fiji Islands has also taken positive steps in the area of sustainable tourism and promotion of ecotourism. This is perceived as a timely move toward attaining a more sustainable management of the country's natural resources. As early as 1972, various ecotourism-related initiatives had been started;¹⁴ based on a recent survey, about 22 ecotourism operators are now licensed. NZAID has been assisting the country in this effort since 1989, and was responsible for helping to establish two of the best models of sustainable park management in the Pacific. The Fiji Islands' recent partnership with Green Globe Asia-Pacific to provide tourism-related companies and resort areas with "Green Globe 21" recognition and certification¹⁵ is expected to attract even more support from external development partners, particularly in the area of protected area management and biodiversity conservation.

As to biodiversity conservation financing, several efforts to establish viable trust funds at the national and subnational levels are worth noting. For example, Box 3 gives an overview of FSM's Micronesia Conservation Trust. Other trusts include the Mama Graun Conservation Trust Fund in PNG and emerging community-based trusts for the districts of Aliepata and Saafata in Samoa.

¹⁴ Some of these areas are Colo I Suva Forest Trail, Iguana Sanctuary on the Island of Yadua Taba, Levuka Historic Town, Vaisali Forest Park, Waikatakata Forest Trail, Sagatoka Sand Dunes National Park, and the Tavuni Hill Fort (Harrison, D. and J. Brand. 2002. Ecotourism in Fiji. In: Harrison, D. (ed.), *Pacific Islands Tourism*, Cognizant, New York).

¹⁵ Recently, a Best Practice Ecotourism and Green Globe Benchmarking Training was conducted and attended by some 97 tourism entrepreneurs.

Box 3: The Micronesia Conservation Trust

The Micronesia Conservation Trust (MCT) was created in 2002 to support biodiversity conservation and related sustainable development for the people of the Federated States of Micronesia (FSM). The MCT accomplishes this by providing long-term, sustained funding through a grant program that encourages people to adopt sustainable and appropriate solutions to local environmental challenges.

The MCT is set up as a private corporation with a governing board of nine members, including members from national, state, and municipal governments, NGOs, business, and academic institutions. The board members represent the two major ecoregions of the FSM—the low islands (coral atolls) and the high islands (volcanic islands). The MCT is working to mobilize funding from a variety of public and private sources to build an endowment of \$20 million to provide long-term support for sustainable biodiversity resource management in the FSM.

In addition to providing financial support, the MCT is placing special emphasis on building the capability of Micronesian organizations to design and manage conservation programs. It also provides a national forum to bring together people from government, private enterprise, and community and nonprofit organizations to collectively address the challenges of natural resource management in the FSM, enhance public-private partnerships, and share experiences and best practices.

The MCT will manage a program of grants to implement the FSM's National Biodiversity Strategy Action Plan, which was completed in April 2002. The MCT will finance innovative and effective projects that

- Build community awareness about biodiversity conservation and related environmental education programs;
- Support the conservation of priority natural biodiversity resource areas;
- Strengthen the ability of communities, community organizations, government agencies, conservation and development NGOs, and other appropriate organizations to conserve the FSM's biodiversity and sustainably manage its natural resources for the benefit of future generations; and
- Support biodiversity conservation advocacy.

Source: MCT 2002.

Energy-Environment Linkages

Current Status. Energy is a fundamental input to most economic and social activity, and adequate and affordable energy supplies are vital in providing the basis for sustainable development in the Pacific region (CROP 2002). They are also a prerequisite for expanding education, health services, and communications, and are strongly tied to environmental management; energy-environment linkages within the Pacific sustainable development context involve many complex and interdependent factors. Demographics vary widely among PDMCs, but most feature small, isolated population centers. Markets are very thin, difficult to serve, and without significant economies of scale. About 70% of the region's population is without access to electricity, but this varies widely from 10% to 100% at the national level. The predominance of archipelagoes makes infrastructure development difficult and potential environmental impacts significant. In addition, most Pacific island countries do not have indigenous petroleum resources. Only a few have hydropower potential; renewable energy, mostly in the form of mini-hydropower, contributes less than 10% of commercial generation. Nevertheless, all PDMCs have potential for developing wind, solar, biofuel, geothermal, ocean thermal, and wave/tidal energy, which may play crucial roles in their sustainable development.

Priority Issues. Pacific island countries and territories have special concerns, arising from their unique situation, that affect their energy potential and policies (CROP Energy Working Group 2002). The region is marked by limited human and institutional capacity to respond to energy challenges. Environmental damage, habitat loss, and pollution resulting from development and use of conventional energy sources have significantly and adversely affected fragile island ecosystems. Although largely caused by developed countries' energy use, environmental vulnerability to climate change and rising sea levels is very high, particularly for small islands and low-lying atolls. Energy supply security is also at risk: most countries have only limited storage capacity for bulk petroleum fuels, which are sourced over a long supply chain at relatively high prices. The scope for market reforms is limited—considering the variation in size and density of markets—so appropriate energy alternatives vary greatly among countries. Of special note also is the fact that women are significant energy users but are poorly represented in energy policy, planning, and development.

Development of renewable energy resources seems to offer promise in the region, especially if linked to new financing vehicles such as the Clean Development Mechanism. However, renewable energy development has been limited by technology, institutional, and market constraints. As noted, most PDMCs are endowed with a renewable resource base that holds high potential for contributing to sustainable development, but most still rely on fossil fuels. High up-front costs and the difficulties presented by small markets in providing alternatives to fossil fuel-based energy supplies at reasonable cost have prevented wider propagation of renewable energy in the region. Significant savings are possible on the demand side as well, for example, by promotion of high-efficiency appliances, installation of more efficient diesel generators, and improvement of ground transport efficiency. All of these measures hold potential for generating ancillary reductions in greenhouse gas (GHG) and other harmful emissions.

Regional Responses. In response to these challenges and concerns, the Pacific Energy Policy and Plan (PEPP) has been developed as a means of coordinating the energy programs of the regional organizations and development partners (Box 4). It is also intended to offer guidelines for adaptation to the special circumstances of Pacific island countries and territories.

The PEPP, developed by CROP,¹⁶ has been agreed upon as the common framework for progress in planning and implementing energy sector improvements the region. It is structured around 10 elements, with the following goals in each area:

¹⁶ The CROP Energy Working Group comprises the Pacific Islands Forum Secretariat, Pacific Power Association, Secretariat of the Pacific Community, South Pacific Applied Geoscience Commission South Pacific Community, University of the South Pacific, and UNDP.

Box 4: The Rarotonga Declaration on Energy for the Sustainable Development of the Pacific Islands

Pacific Regional Energy Meeting Convened
in the Cook Islands, 15-19 July 2002

Reaffirming our region's commitment to the implementation of Agenda 21 and the Rio Principles;

Concerned about our heavy reliance on fossil fuels, energy supply security, its effects on our small and vulnerable economies, and the constraints this places on our sustainable development;

Concerned at the increased vulnerability of low-lying atolls in the Pacific region, to climate change, climate variability and sea-level rise, significantly contributed to by global emissions of greenhouse gases;

Deeply concerned at the environmental and cultural damage, habitat loss and pollution resulting from development and use of conventional energy sources on our fragile Island ecosystems and the need for effective international support and efforts at all levels;

Welcoming the progress made to finalize the Draft Implementation Plan for the World Summit on Sustainable Development, in particular, on the issue of promoting renewable energy and access to energy for the poor;

Acknowledging the World Summit on Sustainable Development processes and the importance energy has to play in sustainable development as identified in the WSSD Plan of Action; and

Recognizing the vital role energy plays in achieving sustainable development in the Pacific region.

NOW THEREFORE, the Meeting:

Calls on all States to set effective targets and timetables within the WSSD Implementation Plan to achieve a significant increase in, and access to, the use of renewable sources of energy and energy efficiency;

Calls on the international community to support the ratification of the Kyoto Protocol;

Further Calls on all States to support Pacific island people in their efforts to develop and improve access to affordable, reliable, and environmentally sound energy for sustainable development for all Pacific islanders;

Calls on the partners and stakeholders to energy initiatives in the Pacific region to ensure the appropriate transfer of technology;

Supports the Type II Initiative/Partnership on Energy for Sustainable Development in the Pacific, as a basis for further consultation and partnership development;

Urges the international community, and funding agencies to recognize the priorities and activities contained in the Pacific Energy Policy and Plan and to assist the region in its implementation;

Further urges the international community to respect the right of Pacific island countries to determine what sources of energy are most appropriate for their sustainable development.

Source: CROP 2002.

- (i) *Regional Energy Sector Coordination*: A cooperative approach to sector coordination that maximizes the impact of regional resources and capabilities;
- (ii) *Policy and Planning*: Open and consultative cross-sector policy development and integrated planning to achieve sustainable supply and use of energy;
- (iii) *Power*: Reliable, safe, and affordable access to efficient power for all Pacific islanders in both rural and urban areas;
- (iv) *Transportation*: Environmentally clean, energy-efficient, and cost-effective transportation within the region;
- (v) *Renewable Energy*: An increased share of renewable energy in the region's energy supply;
- (vi) *Petroleum*: Safe, reliable, and affordable supplies of petroleum products to all areas of the Pacific, including rural and remote islands;
- (vii) *Rural and Remote Islands*: Reliable, affordable, and sustainable energy supplies for the social and economic development of rural and remote islands;
- (viii) *Environment*: Environmentally sustainable development of energy sources and use of energy within the region;
- (ix) *Efficiency and Conservation*: Optimized energy consumption in all sectors of the regional economy and society; and
- (x) *Human and Institutional Capacity*: Adequate human and institutional capacity to plan, manage, and develop the Pacific energy sector.

Substantial technical and financial support has been provided to renewable energy and energy efficiency projects in the Pacific region. Aside from PEPP, the other main program currently being implemented is the Pacific Islands Renewable Energy Project (PIREP) supported by UNDP and GEF. PIREP¹⁷ builds on work undertaken under the Pacific Islands Climate Change Assistance Program (PICCAP)¹⁸ and aims at supporting regional and national interventions that remove barriers to renewable energy development and facilitate promotion, use, and commercialization of renewable technologies through the

¹⁷ PIREP covers 14 countries and has a duration of 18 months with a budget of \$840,000. Implementation started in August 2002.

¹⁸ The PICCAP project is funded by GEF/UNDP/United Nations Institute for Training and Research and implemented by SPREP in 10 Pacific Island countries. Its task, among others, is to establish the technical and scientific background prior to developing policies on climate change and variability by undertaking activities like GHG inventories, mitigation options, and vulnerability and adaptation assessments.

establishment of a suitable enabling environment. SOPAC also implements a number of energy and renewable energy programs in (i) energy resource assessment (wind, biomass, ocean-based resources, and geothermal); (ii) energy conservation, efficiency, and demand-side management; and (iii) energy and environment education through a new postgraduate course in wind energy at the USP. Another ongoing program is the Pacific Rural Renewable Energy France-Australia Common Endeavour (PREFACE).¹⁹ Its goal is to increase utilization of renewable energy sources, in particular solar photovoltaic and wind energy, through the development of country-level sustainable financial and management arrangements.

Since 2001, ADB, with co-financing from the Government of the Netherlands, is implementing in the Asia and Pacific region a TA for promoting renewable energy, energy efficiency, and GHG abatement projects (PREGA) (ADB 2001c).²⁰ The TA supports renewable energy and energy efficiency development through, among others, removal of policy and institutional barriers; preparation of renewable energy and energy-efficient country strategies, programs, and work plans; generation of a pipeline of investment projects for consideration for financing; and development of financial schemes. Recently, another ADB TA, Renewable Energy and Energy Efficiency Program for the Pacific (REEP),²¹ was approved and funded under the Danish Cooperation Fund for Renewable Energy and Energy Efficiency in Rural Areas. The REEP aims to (i) disseminate information on renewable energy sources and improved energy efficiency, especially on the demand side; (ii) develop 5–6 demonstration programs (including maintenance plans); and (iii) design financing schemes and implementation mechanisms in the low-income Pacific island countries and Timor-Leste to assist promotion of renewable energy resources in a reliable and sustained manner, as well as increase the efficiency of energy use.

¹⁸ The PICCAP project is funded by GEF/UNDP/United Nations Institute for Training and Research and implemented by SPREP in 10 Pacific island countries. Its task, among others, is to establish the technical and scientific background prior to developing policies on climate change and variability by undertaking activities like GHG inventories, mitigation options, and vulnerability and adaptation assessments.

¹⁹ PREFACE, a program implemented by SPC and started in 2000, is jointly funded by France and Australia, and has a 3-year duration and a budget of A\$3 million.

²⁰ Samoa is the only PDMC participating in the PREGA project.

²¹ This ADB TA was approved on 28 April 2003 with funding of \$750,000; \$600,000 is to be financed on a grant basis from the Danish Cooperation Fund for Renewable Energy and Energy Efficiency in Rural Areas, while the remaining \$150,000 will be provided by two participating PDMCs as counterpart funds.

Local Responses. In various ways, regional projects funded through multilateral and bilateral assistance guide the implementation of local projects and initiatives on energy conservation, renewable energy, and energy efficiency. Practically all PDMCs have devoted efforts to building their local capacities; strengthening concerned institutions; and formulating energy policies, plans and programs. For example, the Fiji Islands, drawing lessons from its GEF-funded project,²² highlights the need for an institutional framework, relevant policies, and an updated energy database to carry out a more effective and coordinated approach for sustainable utilization of its energy resources; its Department of Energy is weak in undertaking resource monitoring activities simply because it lacks the necessary equipment to perform the task. Samoa shares the same concern: despite its involvement in the PREGA project, it lacks the human resources and institutional capacity in its energy office, and this is a major constraint in carrying out its activities and commitment. Kiribati raises a similar need for its Energy Planning Unit; meanwhile, it has already formulated a 5-year manpower training program for its government-owned Kiribati Oil Company to augment its technical capability. Solomon Islands, through the assistance of the Japanese Government, has adopted an Energy Master Plan, while Tuvalu is implementing a restructuring of its Solar Electricity Cooperative Society.

With regard to other energy-related projects, negotiations are underway in Samoa for the implementation of the Sili River Basin hydroelectric power generation project. It is now encountering delays, however, because of local communities' demand for payment for the use of the area's resources. Samoa is also looking into the feasibility of installing a state-of-the-art and environment-friendly generator from Sweden to address some of the country's energy needs. In Kiribati, a new Public Utilities Board (PUB) powerhouse has been constructed through JICA funding, while installation of 1,500 solar home systems and construction of a new fuel tank in Christmas Island were made possible through assistance from the European Union. In Solomon Islands, the Solomon Islands Village Electrification Council, through funding support from Taipei, China, Australia (Australian Greenhouse Partnership Office) and Appropriate Technology for Community Environment, Inc., installed a 29.3 kW electric micro hydro system in Raeao Village. The People's Republic of China has

²² Promoting Sustainability of Renewable Energy Technologies and Rural Renewable Energy Service Companies.

provided assistance to PNG for the installation of a small wind-solar hybrid system; AusAID has funded an electrification project in Ha'ano and 'Uiha in Tonga. The installation of solar home systems on the island of Niulakita in Tuvalu has just been completed. Finally, in Vanuatu, a subsidiary company has been established to oversee and manage its rural electrification activities. It has also expanded its Sarakata hydro station from 600 kW to 1,200 kW, and has developed mini/micro hydro power stations in some of its rural communities.

Climate Change and Variability

Current Status. No Pacific environmental issue has so captured worldwide attention as the prospect of rising sea levels, resulting from global climate change, threatening the very existence of many low-lying islands, including entire countries (such as Tuvalu or Kiribati).²³ Pacific island countries are among the most vulnerable on the planet to the impacts of climate and sea-level change. Most populated areas, socioeconomic activities, and infrastructure are located along or near coasts. Even on large high islands, the inhabitable land tends to be in the coastal fringe. In addition to the risk of sea-level rise, climate change, due to increasing quantities of GHGs in the atmosphere, could result in an altered pattern of storm frequency and intensity (the extreme events of tropical cyclones are of particular concern in the Pacific) and lead to increased variability of precipitation and a heightened risk of droughts and/or flooding. More intense storm surges could well increase beach erosion, displace settlements, and damage infrastructure.

The biophysical and socioeconomic environments of PDMCs already are sensitive to variability in atmospheric and oceanic conditions. Their vulnerability can be partly offset by the intrinsic resilience of natural systems and by the active management of these systems to increase their ability to withstand the adverse effects of climatic and oceanic conditions.

High-level political support for climate-related initiatives in the Pacific has continued, along with a growing belief that the impacts of a changing climate are already being experienced through the occurrence of

²³ Global climate change refers to a significant long-term change in the earth's climate system, whereas climate variability refers to short- to medium-term fluctuations in the climate system, and usually includes extreme weather events such as cyclones, floods, droughts, and other related disasters caused by weather phenomena.

increased climatic extremes, such as unusually intense and/or un-seasonal cyclones, flooding, droughts, and other natural phenomena. Recent scientific evidence indicating that global warming could increase the frequency and/or intensity of some extreme events in the decades ahead is thus coming to be more widely understood and appreciated. Vulnerability and harm are enhanced by increased human pressure on natural systems. Given existing sensitivities, there can be little doubt of the potentially devastating consequences for the Pacific should it be proven that adverse changes already are occurring, with more to come in the future. The repercussions would threaten the life-supporting capacity of the Pacific's natural systems and the sustainability of many human habitats.

For these reasons, the adverse impacts of climatic changes—including increased variability—are getting increasingly urgent attention among PDMCs. This is reflected in the numerous South Pacific Forum Leaders' communiqués imploring developed countries to reduce their GHG emissions, and the almost unanimous participation of PDMCs in the United Nations Framework Convention on Climate Change (UNFCCC)²⁴ and the Kyoto Protocol²⁵ negotiations, as shown in Table 20.

This situation is also gaining an increasing degree of international attention. Small island states have been recognized by the United Nations Intergovernmental Panel on Climate Change (IPCC) as highly vulnerable to climate change. In its Third Assessment Report (2001), the IPCC reconfirmed the threat to small island developing countries from rising air and sea temperatures as well as of sea levels, and indicated that these are of special concern to low-lying atoll countries and coastlines (IPCC 2001). The IPCC also has identified coral reefs, atolls and mangroves as among the natural systems most vulnerable to (and under threat of irreversible damage from) climate change. The IPCC also has noted that most of these countries have limited capabilities for adaptation. In 2001, SPREP commissioned a report by regional experts that restated the IPCC conclusions specifically relevant to Pacific island countries, including the following:

²⁴ UNFCCC calls for participation of all countries for the stabilization of GHG emissions that contribute to global warming, which may adversely affect natural ecosystems and human welfare.

²⁵ The Kyoto Protocol was developed in December 1997 as a binding agreement to the UNFCCC to seek commitments from industrialized countries through specific targets for emissions reduction of GHGs into the atmosphere.

- (i) A growing body of observations gives a collective picture of a warming world and other changes in the climate system. The global average surface temperature has increased over the 20th century by about 0.6°C. Sea levels in the tropical Pacific have risen by approximately 2 mm/year, but trends in short sea-level records in the tropical Pacific are complicated by El Niño and La Niña events.
- (ii) Global average temperature and sea level are projected to rise under all IPCC scenarios: global mean temperatures are expected to rise between 1.4°C and 5.8°C and global mean sea-level changes are expected to be between 9 cm and 88 cm over the next 100 years. Changes are expected in some extreme weather and climate events, including higher maximum temperatures and more hot days, more intense (heavy) rainfall events, and (over some areas) an increase in peak wind intensities and mean and peak rainfall intensities in tropical cyclones. Current projections show little change or a small increase in amplitude for El Niño events over the next 100 years. However, even with little or no change in El Niño amplitude, global warming is likely to lead to greater extremes of drying and heavy rainfall, and to increase the risk of droughts and floods that occur with El Niño events in different regions, including small Pacific island states.
- (iii) The best current projections of future climate change for the Pacific islands indicates the region is likely to warm at a slightly slower rate than the global average, but at a rate that is still substantial and likely to have significant impacts. Confidence in rainfall changes is lower because of the strong difficulty of simulating these with low-resolution models. However, the coupled models suggest increased precipitation along the equatorial belt from the dateline eastward, and a likelihood of decreases in the southwest Pacific.
- (iv) Human-induced climate change will persist for many centuries. Of long-term concern to Pacific island states is the potential for large-scale and possibly irreversible impacts from ice-sheet changes, which pose risks that have yet to be reliably quantified. For example, a local warming

Table 20: PDMCs' Participation in the UNFCCC and Kyoto Protocol
(as of April 2003)

Country	Signature	UNFCCC		Kyoto Protocol	
		Ratification or Accession	Entry into Force	Signature	Ratification or Accession
Cook Islands	12/06/92	20/04/93 (R)	21/03/94	16/09/98	27/08/01 (R)
Fiji Islands	9/10/92	25/02/93 (R)	21/03/94	17/09/98	17/09/98 (R)
Kiribati	13/06/92	07/02/95 (R)	08/05/95	–	07/09/00 (A)
Marshall Islands	12/06/92	08/10/92 (R)	21/03/94	17/03/98	–
FSM	12/06/92	18/11/93 (R)	21/03/94	17/03/98	21/06/99 (R)
Nauru	08/06/92	11/11/93 (R)	21/03/94	–	16/08/01 (R)
PNG	13/06/92	16/03/93 (R)	21/03/94	02/03/99	28/03/02 (R)
Samoa	12/06/92	29/11/94 (R)	27/02/95	16/03/98	27/11/00 (R)
Solomon Islands	13/06/92	28/12/94 (R)	28/03/95	29/09/98	13/03/03 (A)
Tonga	–	20/07/98 (A)	18/10/98	–	–
Tuvalu	08/06/92	26/10/93 (R)	21/03/94	16/11/98	16/11/98 (R)
Vanuatu	09/06/92	25/03/93 (R)	21/03/94	–	17/07/01 (A)

FSM = Federated States of Micronesia, PNG = Papua New Guinea, NA = not available, R = Ratification, A = Accession, UNFCCC = United Nations Framework Convention on Climate Change, – = not available.

Source: <http://unfccc.intl>

of 5.5°C, if sustained for 1,000 years, would be likely to result in a contribution to global sea-level rise from ice-sheet melting over Greenland of about 3 meters (m), and current models suggest the West Antarctic ice sheet could also contribute as much as 3 m to sea-level rise over the next 1,000 years (Salinger et al. 2001)

While the costs of disaster management and the aftermath of disaster events are generally quantifiable, the identification of adaptation costs (those that may be incurred because of climate change) is recognized as a difficult task. Given the increasing trend toward integration of environmental and development planning, disaster management in the Pacific may increasingly be blended into a holistic risk reduction approach that places adaptation to climate change within a broader set of activities designed to cope with a range of existing natural threats to sustainable development.

An initial evaluation of the economic and social implications of climate change and variability for the Pacific has concluded that vulnerability will continue to rise as population increases and infrastructure develops in coastal areas (World Bank 2000). This has been an important insight and has helped to impress upon Pacific region finance ministries the value of sound adaptation strategies and investments. For example, in the absence

of adaptation, it has been estimated that a high island such as Viti Levu in the Fiji Islands could experience damages of \$23–\$52 million per year by 2050, equivalent to 2–4% of the country's current gross domestic product (GDP). A group of low islands such as the Tarawa atoll in Kiribati could face average annual damages of more than \$8–\$16 million a year, equivalent to 17–34% of Kiribati's current GDP (World Bank 2002).

The key questions, therefore, are how the impacts will manifest themselves, and what the most appropriate responses are for avoiding, minimizing, and adapting to these impacts. Since PDMCs naturally experience significant interannual variations in climatic and oceanic conditions, some of their natural systems already are well adapted to such stresses. However, many PDMCs now have recognized the need to (i) reduce their vulnerability to these increasing risks through adaptation processes; and (ii) strengthen the human and institutional capacities to assess, plan, and respond to these challenges (Box 5) (World Bank 2002).

It is understandable that Pacific societies are more concerned about extreme events that will be experienced in the short term than those that may occur in the next decade or even the next century. However, the increasing scientific and world opinion that a warmer world is likely to be similar, except for more frequent and intense

Box 5: Vulnerability and Adaptation

Understanding Pacific responses to climate change requires strong attention to two poorly understood concepts: vulnerability and adaptation.

Vulnerability. The vulnerability concept has been broken down into its economic, environmental, and social dimensions: **economic vulnerability**—risk faced by an economy from exogenous shocks to its systems of production, distribution (including and especially markets), and consumption; **environmental vulnerability**—risk of damage to a country's natural ecosystems, such as its coral reefs, wetlands, freshwater, coastal areas and marine resources, forests, and soils; and **social vulnerability**—risk of increased growth in criminal activities, HIV/AIDS infection, children dropping out of school, declining age of prison population, declining public health, rotting public infrastructure, and migration of skilled professionals.

In the context of climate change, vulnerability centers on the degree to which a system is susceptible, or unable to cope with, climate change and variability, including extremes (such as tropical cyclones). In assessing the vulnerability of a country, the biophysical, social, cultural, and economic characteristics are measured, and future climate projections of change are then compared to that baseline. These effects or impacts provide the basis for developing ways of responding (or adaptation options) to minimize the effects on society and the environment.

Studies undertaken in the Pacific over the past 10 years emphasize the high vulnerability of these small island states, and especially low-lying atolls. The economic implications of these studies have only just begun to be quantified. The use of indexes or other measures of vulnerability will continue to be developed. Investment in monitoring and assessment programs to obtain additional basic information will be critical in further assessing vulnerability and managing risk at the national level.

Adaptation is the process through which people reduce the adverse effects of climate on their health and well-being, and take advantage of opportunities that their climatic environment provides. It involves adjustments to enhance the viability of social and economic activities and reduce vulnerability to climate change. This includes current variability and extreme events, as well as longer-term climate change.

Adaptation was a cornerstone of both the Pacific Islands Climate Change Program and the Regional Framework for Action on Climate Change, Variability and Sea Level Rise that evolved out of that project. A further step was taken in May 2002 when it was recognized that investing in adaptation at the national level was an integral part of policies, plans and programs to achieve the sustainable development of Pacific countries. A High-level Consultation on Investing in Adaptation involved senior planning and finance officials in recognizing that, since the impacts of climate change are inevitable for the region, adaptation to climate change should be fully incorporated into national development strategies.

Source: PIFS 2000b, SOPAC 2002.

extreme events, means that much can be learned from present-day responses to climatic and hydrological disasters. The summary of vulnerabilities to extremes shown in Table 21 highlights the risks already facing PDMCs; the hazards that are hydrological in nature give an indication of future vulnerabilities to climate change and variability.

Regional Response. As noted, since the early 1990s climate change issues have been identified as a key element by the South Pacific Forum Leaders in their annual Forum Communiqué. Concern reached its peak in October 2000, when the Forum's leaders endorsed the Pacific Islands Framework for Action on Climate Change, Climate Variability and Sea-level Rise (PIFS 2000b). This Framework serves as an agreed basis for effectively addressing climate change and variability through a cooperative process among all relevant stakeholders. The mechanism for cooperation is the Climate Round-Table, a forum where interested stakeholders can cooperate and collaborate on climate-related activities to avoid duplication and achieve complementarity of effort.

The Framework for Action outlines a wide range of national needs and means for addressing them at both the country and regional levels, and it is endorsed as the principal guidance for regional policy on climate activities. Despite this high-level attention to the issue, however, active support continues to be lacking within key ministries concerned with social and economic development, such as finance and planning. This seems to be based primarily on a persistent perception that climate is an environmental rather than a developmental issue.

Initiatives in response to the threat of climate change and variability

Table 21: Estimated Vulnerability to Natural Hazards in Selected PDMCs

Country	Cyclone Flood	Coastal Flood	River	Drought	Earthquake	Landslide	Tsunami	Volcano
Fiji Islands	H	H	H	M	M	H	L	
Micronesia, Federated States of	M	H	L	H	L	L	H	
Kiribati	L	H		H	L	L	H	
Marshall Islands		M	H		H	L	L	H
Solomon Islands	H	H	H	L	H	H	H	H
Tonga	H	H	M	H	H	L	H	H
Tuvalu	L	H		M	L	L	H	
Vanuatu	H	H	H	L	H	H	H	H

H = High, M = Medium, L = Low, blank cells = does not apply.

Source: United Nations Department of Humanitarian Affairs 1994.

undertaken in the early 1990s were carried out in a rather ad hoc fashion with various sources of support and assistance. From 1997 to 2001, PICCAP provided a mechanism that focused activities into a more comprehensive program. PICCAP used a country-team approach, with government-appointed national coordinators, and concentrated on building in-country capacity to undertake improved technical analysis of vulnerabilities and responses and to interpret these findings for the purposes of climate policy development.

With support from UNDP/GEF, PICCAP was specifically designed to strengthen the capacities of participating Pacific countries through training, institutional strengthening, and enhanced planning to meet reporting commitments under the UNFCCC. Ten countries participated in the program, which was coordinated and executed by SPREP: Cook Islands, FSM, Fiji Islands, Kiribati, Marshall Islands, Nauru, Samoa, Solomon Islands, Tuvalu, and Vanuatu. The goal was to address the common and collective needs of these countries cost-effectively as they prepared their national communications under the UNFCCC. The cooperative endeavor built on the experience and expertise developed under other climate-related activities such as the US Country Studies Program (in which four of the PICCAP countries had participated). Three other countries (Niue, Palau, and Tonga) were ineligible for GEF funding at the time of PICCAP's implementation but were subsequently funded separately, while PNG had begun its own enabling activities prior to PICCAP. Information, experience, and planning of regional efforts as well as training efforts were

shared across the Pacific during PICCAP implementation, but these have waned somewhat since the program's conclusion (the Climate Round-Table remaining as the principal vehicle for regional coordination).

The capacity-building efforts of PICCAP led to the following outputs: (i) an inventory of GHG sources and sinks, (ii) an evaluation of emissions mitigation options, (iii) national vulnerability assessments, (iv) an evaluation of adaptation options, (v) national climate change implementation plans, and (vi) the first national communication under the UNFCCC (Table 22).

Table 22: Dates of Submission of First National Communication under UNFCCC

Country	Date of Submission of First National Communication
Cook Islands	30/10/99
Kiribati	30/10/99
Marshall Islands	24/11/00
FSM	04/12/97; 30/10/99 (addendum)
Nauru	30/10/99
Papua New Guinea	27/02/02
Samoa	30/10/99
Tuvalu	30/10/99
Vanuatu	30/10/99
Niue	02/10/01
Palau	18/06/03

Source: UNFCCC 2003.

The strong participation of PDMCs in international efforts to achieve reductions in the concentration of GHGs in the atmosphere has been coordinated at the global level through the Alliance of Small Island States (AOSIS), a grouping of small island countries. Pacific island countries can be expected to continue to work within AOSIS as well as the UNFCCC and Kyoto Protocol processes to push for global and regional reductions in net GHG emissions. However, even if global efforts to address the causes of climate change are successful, a range of additional actions will be required to stimulate climate-related investments in the Pacific as well as to lessen short-term impacts of climate change and variation. These include (i) removing barriers to the use of renewable energy and promoting energy efficiency measures that will further advance the reduction of GHG emissions; (ii) mobilizing resources for adaptation and considering all implications for adaptation needs, options, and requirements; and (iii) mainstreaming climate change adaptation concerns within government (especially finance and economic) planning and programming processes.

In connection with adaptation mainstreaming, ADB, with financial support from the Government of Canada, has initiated a RETA activity, the Climate Change Adaptation Program in the Pacific (CLIMAP); it will be implemented in two phases and will target policy and program reforms in both PDMCs and ADB itself. The first phase will consist of a stock-taking of past and ongoing adaptation assistance in the Pacific region meant to provide an improved understanding of past climate adaptation activities and to identify those that could facilitate and promote the mainstreaming of climate adaptation both in PDMCs and within ADB's own operations. The emphasis will be on strategic and operational planning, policy review, and pilot project implementation. The second CLIMAP phase will initiate adaptation mainstreaming activities within ADB and in two selected PDMCs, the Cook Islands and the FSM.

Another significant Pacific regional climate change adaptation activity, Capacity Building for the Development of Adaptation Measures in Pacific Island Countries, is also being implemented, with assistance from the Canadian International Development Agency, through SPREP. The overall goal of this project is to assist South Pacific island countries in reducing their vulnerability to climate change. With this goal, the project is

strengthening national capacity (in four participating countries) to adapt continuously to the effects of climate change and to implement selected pilot adaptation measures at the community level.

Local Responses. PDMCs increasingly recognize that climate change, sea-level rise and greater climatic variability can significantly affect their economic, environment, social, cultural, and traditional sectors. Many cultural practices of the region are inextricably interwoven with management of the environment and natural systems. Attention now is turning to the potential application of traditional knowledge systems and practices to development of culturally and environmentally appropriate strategies for climate change adaptation.

As noted, national and, increasingly, local attention is being given to vulnerability and adaptation and the development of appropriate local management strategies. An important element has been improved information management through development and dissemination of simple climate forecasts building on initiatives already underway, such as (i) the Pacific El Niño-Southern Oscillation Applications Center climate forecasts for US-affiliated Pacific islands; (ii) the Australian Bureau of Meteorology collation and dissemination of seasonal and long-range climate forecasts for the South Pacific; (iii) the New Zealand National Institute of Water and Atmospheric Research monthly climate bulletin for the tropical South Pacific islands; and (iv) the Fiji Meteorological Service seasonal rainfall prediction scheme, which has the potential for adaptation to other Pacific island countries.

The promotion of renewable energy technologies and energy efficiency is also increasingly visible at the local level in the climate context. While the region's GHG emissions are tiny (about 0.01% globally), efforts to reduce national emissions continue (in part to lend greater credibility to Pacific pleas for global action under the UNFCCC and Kyoto Protocol). Because a large portion of the region's energy needs are provided by combustion of fossil fuels, adaptation gains can be added to the environmental, financial, and emission reduction benefits of switching to other energy sources. Some larger PDMCs such as Fiji Islands, PNG, and Vanuatu are also beginning preliminary efforts to take advantage of carbon sequestration activities as a further means for reducing net Pacific GHG emissions.

Environmental Governance

The principal environmental conditions and trends as well as responses in the region having been reviewed, it also will be useful to summarize how these challenges and responses are being organized in the Pacific. While policy and institutional frameworks governing environmental management vary greatly at the national level across the region, there are some common patterns worthy of note, as well as some constraints and some significant regional environmental governance issues. Thus far, legal frameworks operating at the regional level have not been extensively utilized, though some useful starts in this direction have been made (for example, the Apia Convention on Conservation of Nature in the South Pacific and evolving fisheries management arrangements). This is in part because the regional institutions responsible are still grappling with how to improve pan-Pacific coordination and national action within a regional framework. With respect to global environmental concerns, the Pacific countries have been active participants in multilateral environmental agreements (MEA), taking a highly vocal stance on many issues, especially climate change. At home in the Pacific,

though, they have had difficulties meeting the reporting requirements of MEAs and managing agreed work programs. The section that follows briefly reviews current approaches to addressing Pacific environmental problems through governance mechanisms organized at the national, regional, and global levels.

National. Table 23 presents the range of government ministries or agencies involved in setting environmental policy and implementing environmental management programs in the PDMCs. National policy and institutional frameworks vary greatly across the region and largely reflect each PDMC's colonial history (notably the British and American systems of governance). These legal frameworks overlay a common Pacific history of consultation at the local, national and subregional levels (SPREP, UNEP, and European Union 1999).

Probably the single most influential external assistance effort over the past decade involved support from ADB and UNDP between 1991 and 1994 to help PDMCs produce national environmental management strategies (NEMS) (ADB 1990). In many countries, the NEMS still provides the principal blueprint for

Table 23: Pacific National Environmental Management Organizations

Country	Environment Ministry/Agency
Cook Islands	Cook Islands Environment Service; Ministry of Foreign Affairs and Immigration; Office of the Prime Minister
Fiji Islands	Department of Environment within the Ministry of Local Government, Housing and Environment
Kiribati	Environment and Conservation Division, Ministry of Lands and Agricultural Development; Ministry of Fisheries and Marine Resources Development
Marshall Islands	Environmental Protection Authority with broad powers to monitor environmental quality and to enforce protective regulations
Micronesia, Fed. States of	Department of Health, Education and Social Affairs; Department of Economic Affairs; National Environmental Management and Sustainable Development Council
Nauru	Environment Division; Department of Island Development and Industry
Papua New Guinea	Department of Environment and Conservation
Samoa	Division of Environment and Conservation, Department of Lands, Surveys and Environment
Timor-Leste	Division of Environment
Tonga	Environmental Planning and Conservation Section, Ministry of Lands, Surveys and Natural Resources
Tuvalu	Environment Unit, Ministry of Environment, Energy and Tourism
Vanuatu	Environment Unit, Ministry of Agriculture, Livestock, Forestry, Fisheries and the Environment

Source: ADB, 1990; SPREP, UNEP, and EU 1999, and SPREP 1999b.

development of environmental policies and plans (Box 6 provides an example based on Samoa's experience).

Despite considerable external support—notably to environment ministries or other national focal agencies for environment—the past decade has not seen much measurable progress either in terms of national institutional capacity (other than the designation/creation of focal points) or impact on environmental quality. On the contrary, most anecdotal measures of environmental quality and natural resource management indicate deteriorating conditions in most PDMCs. Environment units and departments and their legal counterparts in government have been grappling with the introduction of a regulatory environment that takes account of, or weaves in, customary practice and tenure and at the same time leads to improved environmental governance. In Vanuatu, for example, it was recognized that recently adopted

Box 6: National Environmental Management Strategy and Environmental Policy Formulation in Samoa

The National Environment and Sustainable Development Strategy (NEMS), adopted in 1993, identified 12 Target Environmental Components that required the formulation of policies and strategies: land use, population and sustainable development, waste management, freshwater protection, biodiversity, heritage, climate change, protection of the atmosphere (ozone), combating deforestation, development of human resources, protection of the sea and marine resources, and promoting sustainable economic growth. Since 1993, five have been approved as national policies in Samoa:

- National Waste Management Policy,
- National Land Use Policy,
- National Water Resource Policy,
- Natural Heritage Conservation Policy, and
- National Forestry Policy.

Each of these policies includes strategies that the focal implementing agency, the Department of Land, Surveys and Environment, and all relevant stakeholders-government departments and the private sector—can use as working documents to meet the objectives they set out.

Source: Government of Samoa 2002.

environmental legislation would be ineffective without extensive consultation throughout the provinces; this process then took 4 years to complete. Cook Islands, Fiji Islands, and Samoa have engaged in similarly extensive consultations to assist development of legislation for environmental impact assessment, sustainable development, and outer island environmental governance.

With limited resources, often reflecting their junior status within government, environment departments have actively encouraged national commitment to global conventions and agreements. Ratification or accession to these agreements is a requirement before financial resources can be obtained (primarily through the GEF). The “Catch 22” is that the kind of engagement necessary at the international level, through both international meetings and reporting requirements, further strains the resources available to address national priorities. Few PDMCs have passed national environmental legislation or even basic regulations requiring the assessment of potentially harmful impacts from development projects (environmental impact assessment). Even where laws governing environmental or natural resource management do exist, enforcement remains weak. Therefore, an essential governance issue is why PDMCs seem so willing to sign on to and participate in a variety of regional and global plans of action, but rarely follow through with comprehensive national action plans, budgets, and staff to implement these undertakings.

Beginning in the early 1990s, considerable discussion has taken place about integrating environment and development—or “mainstreaming”—in the Pacific (SPC 1992). More recently, the importance of integrated environment-development decision making also has been highlighted as an essential framework for organizing policy responses to the environmental challenges facing the region (SPREP, UNEP, and European Union 1999). Thus far, however, little progress has been made on the ground with either approach.

Some regional work has encouraged the introduction of these approaches. An ongoing initiative coordinated by the PIFS is developing practical approaches to the integration of environmental considerations into national development and financial planning. Mainstreaming also has become a leading theme for biodiversity conservation across the Pacific.²⁶ This

²⁶ Outcome of 7th Pacific Islands Conference on Nature Conservation, Rarotonga, 2002, and the Pacific Islands High Level Consultation: Investing in Adaptation, Nadi, Fiji Islands, 2002.

reflects national efforts to create stronger links between environmental information, management, and systems of national planning (Box 7 provides an example of such policy initiatives in the Fiji Islands). It is gaining the attention of economic and financial planners, and integration of economic, social, and environmental dimensions was adopted as the theme of the 2003 Forum Economic Ministers' Meeting (PIFS 2003). It was recognized that making environmental issues an integral part of economic development decision-making was a necessity and essential in policy integration and formulation. The key issues agreed upon at the meeting included the following:

- (i) the need to ensure that international treaties and agreements signed by PDMCs are compatible with national capacities and policies;
- (ii) the need to remove perverse subsidies that prevent adoption of environmentally sound innovations;
- (iii) the need to consider taxing environmentally destructive activities;
- (iv) the need to create stronger environmental regulatory regimes; the need to strengthen institutions capable of economic, social, and environmental policies and plans; and
- (v) the need to integrate the Forum Economic Action Plan into a sustainable development framework.

In addition, pressure has been increasing across the region in recent years for greater accountability and improved participation by and with a wide range of stakeholders in the formulation and conduct of government policies and programs. These include interactions among government bodies, local communities, NGOs, the private sector, academia, the media, and external assistance agencies. In response, government reforms have attempted to improve transparency and accountability associated with the development of national economic policy. Perhaps because of the direct impacts of environmental mismanagement on people's health and livelihoods—and taking into account that environmental NGOs are among the most vocal stakeholders demanding transparency in government decision making—considerable pressure has been placed on governments to reform their environment policy and planning processes so that they are more participatory and collaborative.

Box 7: Fiji Islands—Objectives for Environmental Mainstreaming

The national policy objectives for managing the Fiji Islands' environment are stated in *A Strategic Plan for the New Century* (National Planning Office 1999) and are as follows:

- Develop and include environmental policies in national economic planning through adoption of environmental impact assessments, creation of a National Council of Sustainable Development, and adoption of natural resources accounting in the national accounts;
- Strengthen the institutional capacity for sound environmental management;
- Consolidate and update environmental and resource management legislation under a single enabling and enforceable legal framework (Sustainable Development Bill); and
- Encourage traditional methods of resource and environmental management.

Source: Government of Fiji Islands 2002.

Traditional Environmental Management Systems. The fragile ecosystems and limited resource base of PDMCs historically have caused their peoples to share a strong affinity with, and dependence on, land and ocean resources for their livelihoods and economic activity. The traditional way of life was largely an ecologically sustainable one; care for the environment was essential to allow future generations to benefit from natural resource endowments. However, new technologies for resource exploitation—and a breakdown of traditional management systems for keeping resource extraction within sustainable levels—has led to increasing pressure on natural resources and, in some areas, environmental degradation.

The negative effects of development on natural systems are thus becoming more visible in the Pacific. As noted, rapidly changing lifestyles are generating nonbiodegradable wastes such as aluminum cans, plastics, and abandoned vehicles. While many reef ecosystems remain relatively undisturbed, others are threatened by coral harvesting and destructive fishing methods used to supply the aquarium fish and food markets. These problems are now worsening and may

affect prospects for maintaining the pace of economic development in the entire Pacific region. They are occurring partly because of the declining role of traditional leaders in decision-making processes governing natural resource management. In addition, while livelihood skills, agriculture, and other practical subjects are still taught in Pacific education systems, they are increasingly based on externally developed technologies with inadequate emphasis on the use or blending of traditional, appropriate, and ecologically sustainable techniques and management practices.

Knowledge and understanding of traditional practices passed down through the generations are now being lost due to sociocultural changes and modern influences. Hence, it is necessary to promote understanding and appreciation of traditional environmental management practices where they still represent viable approaches to resource management, by encouraging the blending of such practices with newer thinking and technologies. Examples of successful efforts in this regard may be found throughout the region. In the Fiji Islands, an innovative approach to the development and strengthening of locally managed marine areas is bringing together traditional practices and local commitment to conservation with the skills and expertise of NGOs and USP. The Fiji Locally Managed Marine Areas Network was recently awarded an Equator Initiative Prize at the World Summit on Sustainable Development. Further illustrations of attempts to better integrate traditional and modern environmental management practices may be found in the case studies that are detailed in the accompanying volume and summarized in Appendix 2.

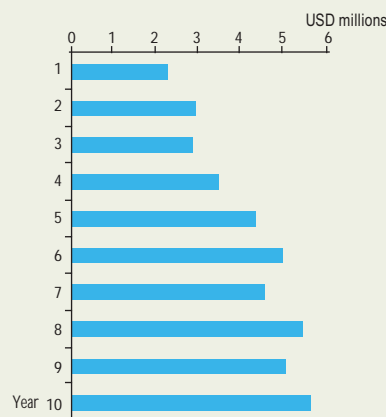
Regional. A solid institutional framework now exists at the regional level to facilitate Pacific-wide dialogue on common environmental management problems and shared natural resources. These organizations were created with at least three justifications in mind. First, they are meant to achieve economies of scale in gathering expertise and making it available to Pacific countries, so that each country does not need to duplicate this capacity. Second, they allow countries to better address common problems and those that are

transboundary in nature. Third, they facilitate regional dialogue and increase the strength of the Pacific “voice” in regional and global forums. When it comes to program interventions, however, these organizations are most effective at regional rather than country levels. The intergovernmental organizations that form CROP—the core capacity to provide such services—are shown in Box 8.

As the leading CROP member dealing with environmental matters, SPREP has played a prominent role in encouraging regional attention and responses to the environmental challenges of the Pacific. SPREP’s Action Plan and Work Program are governed by its 26 member countries, and it provides an intergovernmental forum for achieving the region’s environmental objectives. Two Pacific-wide environmental agreements promulgated in 1990 form a potentially useful foundation on which further regional cooperation can be built: (i) the Convention on Conservation of Nature in the South Pacific (Apia Convention) and (ii) the Convention for the Protection of the Natural Resources and Environment of the South Pacific Region (SPREP Convention). The former provides the basic structure for regional cooperation on environmental matters, while the latter deals with the structure of SPREP. SPREP’s funding has been growing in recent years (Figure 2), and approximately 40% of its resources have been derived from the GEF through one or another implementing agency (mostly UNDP). The focus has been primarily on capacity building in biodiversity conservation, though there is now an increasing emphasis on water, coastal management, waste management, and climate change, as well as broader environmental management/sustainable development. Though SPREP has been given the lead responsibility for the environment field among regional organizations, virtually all CROP members have some type of environmental management activity among their programs.

In addition to these officially recognized regional organizations, a growing number of regional NGOs in the Pacific focus their attention on environmental issues. These include the World Wide Fund for Nature South Pacific Program, the Foundation for the Peoples of the South Pacific, the Pacific

Figure 2: Expenditures on Regional Environment Programs through South Pacific Regional Environment Programme (1991–2000)



Source: SPREP Annual Reports 1991–2000.

Box 8: Members of the Council of Regional Organizations in the Pacific

South Pacific Regional Environment Programme. SPREP was established in 1982 by the governments and administrations of 22 Pacific island countries and four developed countries with direct interests in the region to promote cooperation and support protection and improvement of the Pacific environment and ensure its sustainable development. It is based in Samoa.

Pacific Islands Forum Secretariat. PIFS was established in 1971 by the independent and self-governing countries of the Pacific to enhance the economic and social well-being of the Pacific islands in support of the efforts of national governments. It now has 16 members: Australia, Cook Islands, Fiji Islands, Kiribati, Marshall Islands, Federated States of Micronesia, Nauru, New Zealand, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu. PIFS is the permanent chair of CROP.

Forum Fisheries Agency. FFA, headquartered in Honiara, was established in 1979 by the independent states of the Pacific Islands Forum Secretariat to enable its member countries to obtain maximum sustained benefits from the conservation and sustainable use of their fisheries resources.

South Pacific Applied Geoscience Commission. SOPAC originated in 1972 as the Committee for Coordination of Joint Prospecting for Mineral Resources in South Pacific Offshore Areas. Its member countries—Australia, Cook Islands, Fiji Islands, Guam, Kiribati, Marshall Islands, Federated States of Micronesia, New Zealand, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu—have given SOPAC the mandate, in relation to the nonliving environment, to focus on the

development of natural resources in a sustainable manner and reduce vulnerability. It is headquartered in the Fiji Islands.

The Secretariat of the Pacific Community. SPC, established in 1947, has 5 metropolitan and 22 island country/territory members and is headquartered in Noumea, New Caledonia. Its current work program covers land, marine, and social development.

South Pacific Tourism Organisation. An inter-governmental organization, it also includes private sector members on its governing council. Its role is to work with national tourist offices, international airlines, and tour operators to increase visitor arrivals in the region, and to market and promote tourism.

University of the South Pacific. USP was established in Suva, Fiji Islands, in 1969 and has campuses and offices, tutorial studies, classrooms, and libraries in 10 of the 11 countries of the region. The university has four schools and seven action-oriented institutions, including a new Pacific Centre for Environment and Sustainable Development, and units for atoll research and extension services.

Pacific Islands Development Program. Established in 1980 with 21 member countries and based at the East-West Center in Honolulu, Hawaii, the program serves as Secretariat of the Pacific Islands Conference of Leaders. It compiles the daily *Pacific Islands Report* and provides other information services, promotes private sector development and positive cross-cultural business interactions, and conducts education and training programs.

Note: CROP has recently accepted two additional members, *Fiji Islands School of Medicine* and *South Pacific Board of Education*, bringing the total membership to 10 organizations.

Source: CROP.

Concerns Resource Center, the Pacific Youth Caucus for the Environment, the Pacific Island Association of NGOs, and the Nature Conservancy's Pacific Program. These organizations are in addition to the broader-based Pacific Congress of Churches and youth groups such as the Young Men's or Young Women's Christian Associations, which are also engaged in certain environmental management activities.

Global. As noted, the response of Pacific countries to global environmental initiatives—especially given their relatively weak institutional base at the national level—has been quite impressive. In addition to the UNFCCC described above, the PDMCs are parties to most existing multilateral environmental agreements (MEAs). They are very active participants in meetings associated with these MEAs, as well as with related forums such as UNCED, CBD, the

Barbados Program of Action for Small Island Developing States, and WSSD. Councils, committees, commissions, and other bodies have been formed at the national level to coordinate PDMC obligations under these many treaties and MEAs.

The PDMCs have made considerable efforts to respond to MEA requirements, and this has influenced domestic policy by generating a baseline of related plans and commitments to action (Tables 24 and 25). Though these are currently stand-alone exercises and

documents, several PDMCs have discussed consolidating them at the national level under national sustainable development strategies (NSDS), to coordinate with their national development strategies (WSSD 2002). At WSSD, the international community urged that all countries should complete their NSDS by 2005. PDMC participation in these global efforts has yielded considerable external support. However, as noted above, it sometimes has come at the expense of diverting attention away from pressing domestic environmental issues.

Table 24: Environmental Policy and Planning Exercises of Pacific Island Countries

Country	NEMS	UNCED Country Report	UNFCCC National Communication	CBD National SAP	WSSD National Assessment	UNCCDD Country Reports
Cook Islands		✓	✓	✓	✓	✓
Fiji Islands	✓	✓	✓	✓	✓	✓
Kiribati	✓	✓	✓	✓	✓	✓
Marshall Islands		✓	✓	✓	✓	✓
Micronesia, Fed. States of	✓	✓	✓	✓		
Nauru	✓					
Palau	✓	✓	✓			✓
Papua New Guinea		✓	✓		✓	✓
Samoa	✓	✓	✓	✓	✓	✓
Solomon Islands	✓	✓	✓		✓	✓
Tonga	✓	✓			✓	✓
Tuvalu	✓	✓	✓			✓
Vanuatu	✓		✓			✓

CBD = Convention on Biological Diversity, NEMS = National Environment Management Strategy, SAP = Strategic Action Plan, UNCED = United Nations Conference on Environment and Development, UNFCCC = United Nations Framework Convention on Climate Change, UNCCDD = United Nations Convention to Combat Drought and Desertification, WSSD = World Summit on Sustainable Development.

Sources: SPC 1992; <http://unfccc.int/resource/netcom/index.html>; <http://www.biodiv.org/world/reports.aspx?type=nbsap>; http://www.wssprep.org.ws/publication/pub_list.asp; <http://www.unccd.int/convention/ratif/doiif.php>

Table 25: Pacific Country Participation in Multilateral Environmental Agreements

Pacific Developing Member Country	Global Agreement/Convention															Regional Agreement/Convention				
	Ramsar Convention	World Heritage Convention	MARPOL	CITES	Convention of Migratory Species	UNCLOS	Ozone Layer (Vienna) Convention	Montreal Protocol	Basel Convention	Rotterdam Convention	Convention on Climate Change	Kyoto Protocol	Convention on Biological Diversity	Cartagena Biosafety Protocol	Convention to Combat Desertification	POPs Convention (Stockholm)	Waigani Convention	SPREP Convention	Regulation of Whaling Treaty	Apia Convention
Cook Islands						®	®				®	®	S	A		®	®		®	S
Fiji Islands		®		A		®	A	A			®	®	®	A	®	®	®		®	S
Kiribati		®				®	A	A	A		®	A	S	A	S	®	®			S
Marshall Islands		®	®			®	A	A	A	A	®	®	®	A	A	®	®			S
FSM		®				®	A	A	A		®	®	®	A	A	®	®			S
Nauru						®	A	A	A		®	®	®	A	A	®	®			S
Papua New Guinea	®	®	®	A		®	A	A	A		®	®	®		A	S	®	®		S
Samoa		®				®	A	A	A	A	®	®	®	®	A	®	®	®	®	S
Solomon Islands		®				®	A	A			®	A	®	A	A	®	®	®	®	S
Tonga			®			®	A	A			A	®	®	A	S	®				S
Tuvalu			®			®	A	A			®	®	®	A		A	®			S
Vanuatu		®	®	A		®	A	A			®	A	®	®	S	®	®			S

® = Ratified; S = Signed; A = Acceded. CITES = Convention on International Trade in Endangered Species of Wild Fauna and Flora; MARPOL = International Convention for the Prevention of Pollution from Ships; SPREP = South Pacific Regional Environment Programme; UNCLOS = United Nations Convention on the Law of the Sea.

Sources: SPC 1992, http://www.sprep.org.ws/publication/pub_list.asp

Emerging Response Strategies

Institutional Capacity and Legal Frameworks.

Concerted action to strengthen national capacity for environmental management is relatively recent among PDMCs. Although environmental issues have been discussed regionally since the mid-1970s, the most significant investments have been undertaken only over the last 10–12 years. Any achievements and failures need to be considered in this context.

The effort to strengthen national capacity to manage the Pacific environment has taken place within a complex mix of legacies from often relatively recent colonial administrations overlying strong social and cultural values and mores (UNEP 1999). Governments vary from Westminster-based parliamentary systems to federations.

Regardless of their particular form, Pacific governance systems share a strong common tradition of public consultation when deciding local, national, or regional affairs. Customary forms of decision making and justice—including those associated with certain environmental management systems—still hold considerable influence amid the modern mix of government and civil society institutions.

In the early 1990s, no real legal framework or institutional capacity for environmental management existed among PDMCs. While some progress has been made from the low base over the past decade, the environment subject typically has remained a junior or noncabinet portfolio, although the number of exceptions to this rule is growing. For example, in Samoa, environment and lands have been placed within the same ministry and entrusted to a senior cabinet minister since 1995.

The nature of their “smallness”—and their increasing vulnerability—poses special challenges for PDMCs. This is recognized as part of the “special case” that has been increasingly made for extraordinary modes of international assistance for SIDS (SOPAC 2001, World Bank 2000). As discussed in Chapter 1, the common characteristics of SIDS include their remoteness and isolation, open markets, susceptibility to natural disasters and environmental change, limited economic diversification, poverty, limited institutional capacity, income volatility, and weak access to external capital.

In 1990, many PDMCs had only a handful of staff (often only one or two) dealing with environmental matters. As countries worked to strengthen this capacity, one of the earliest interventions centered on preparation of NEMS (ADB 1990) or their equivalents. As previously mentioned, these strategies were designed to bring together a wide range of stakeholders at the national level to review the state of the environment and to conduct a number of sector-based reviews to determine how best to promote sound environmental practice. In most cases, these strategies included a list of project profiles that provided the direction for high-priority investments or policy development/reform. No systematic analysis has been conducted to examine how much of this agenda actually was implemented, but the proportion is probably fairly low.

The NEMS paved the way for further national and regional environmental projects and programs designed to (i) strengthen environmental institutions at national and regional levels; (ii) support or develop environmental legislation and policy; (iii) enable countries to implement regional and global agreements; (iv) promote Pacific priorities at the international level; (v) raise environmental awareness in government and civil society at large; and (vi) build individual skills and capacity of environmental managers and communities.

In most PDMCs, a significant gap remains between the increasingly pro-environment government rhetoric and the capability to deliver environmental benefits at the national and local levels. At least on paper, capacity now has increased to the point where countries are demanding further international environmental assistance to support significant increases in national programs. While this is a logical progression, this relatively thin institutional baseline has been, and remains, a central constraint to the implementation of a

wide range of environmental projects and programs in the PDMCs.

For small island countries and economies dominated by the public sector, an added challenge has been presented by parallel institutional or public sector reforms throughout the 1990s. For several countries, institutional continuity also has been disrupted by civil conflict. The role played by environment ministries and departments—especially vis-à-vis the establishment of stronger environmental capacity in line ministries and other branches of government—will need to be carefully considered as public sector reforms progress.

In the early 1990s, the environment was seen as a supplemental “special concern” or even a distraction representing a “constraint to development.” UNCED in 1992 went some way toward promoting the idea that concern for and action to support both the environment and development can and must co-exist and can even be mutually supporting. Although this concept was not immediately translated into activities on the ground, an increase in public and political support for sustainable development in the Pacific occurred (SPREP 1996b, PIFS 1994).

Today, reinforced by preparations for and decisions at the follow-up 2002 WSSD Earth Summit in Johannesburg, attention to sound environmental management is seen as one of the three pillars of sustainable development, to be considered alongside economic and social goals. These relatively rapid changes in how environmental management is perceived and, ultimately, how assistance agencies and PDMC governments define their objectives in relation to aid programs are an important factor when considering the overall effectiveness of past environmental assistance in the PDMCs and mapping a strategy for the future.

For most PDMCs, these shifts in emphasis have led to a certain degree of frustration, as the conditions for development and/or environmental financing have had to be adjusted to match the latest criteria or environmental priorities. In many cases, shaping assistance to fit funding agency parameters has led to environmental management projects in which objectives do not match local needs, where expectations of funding agencies and recipients differ and outputs become compromised. Pacific countries are constantly playing “catch-up” as development fashions change over time

and local needs and opportunities are matched with resources made available by the international community.

For example, the WSSD discussions resulted in a new emphasis on links between efforts to reduce poverty and those to improve environmental management. ADB sponsored a study on this subject in the Pacific (ADB 2000c), and some limited environmental economic valuation studies have attempted to show the market and nonmarket benefits to households, communities, and the national economy from environmental services. However, much more analysis will be needed to clearly understand poverty-environment linkages in the region and their programming implications.

Pacific Responses to Global Initiatives. The 2002 WSSD meeting produced a modest Plan of Implementation and a Declaration that, nonetheless, are important as they continue to strengthen broad international support for sustainable development. The Pacific region was well represented at WSSD by delegations from 13 Pacific island countries,²⁷ plus Australia, France, New Zealand, and the United States as well as six Pacific regional organizations²⁸ and a number of NGOs. Pacific delegations participated in the Partnership Plenaries, statements by non-state entities, addresses by heads of state and government and other senior officials, four high-level round tables on the theme “Making It Happen,” and a multistakeholder event.

²⁷ Cook Islands, FSM, Fiji Islands, Kiribati, Marshall Islands, Niue, Palau, PNG, Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu.

²⁸ PIFS, SPREP, SOPAC, South Pacific Tourism Organization, USP, and SPC.

In Johannesburg, the Pacific heads of government also announced a number of initiatives/partnerships. These concepts bring together a wide selection of partners that have decided to make a coordinated effort in a particular area and to increase the efficiency and effectiveness of deliverables to the local level. They are not projects in themselves but rather partnerships that aim to supplement and leverage resources for project concepts or current projects in a given area. They have been developed on the basis of the Pacific Regional Submission to WSSD (Appendix 1) as well as needs reflected in national environmental assessments prepared for WSSD, and were further discussed and refined at the WSSD Implementation and Barbados Program of Action Stakeholders Consultations organized by PIFS and held in Nadi, Fiji Islands, on 24–25 March 2003. The current list of proposed umbrella initiatives covers the following 14 topics:

- Capacity building and distance education
- Energy
- Adaptation
- Land resources
- Governance
- Tourism
- Vulnerability and disaster management
- Health care
- Information and communication technology
- Water
- Conservation mainstreaming
- Oceans
- Planning and community development
- Waste management



CHAPTER 3

Assessing ADB's Environmental Assistance to the Pacific

ADB's Environment-Related Assistance to PDMCs

Over the past decade, ADB has been an active partner in national and regional efforts to improve environmental management capacity and performance in the Pacific. It has supported a large amount of technical assistance (TA)²⁹ and many grant and loan projects to help address environmental challenges facing PDMCs. From 1992 to 2002, ADB supported 53 country-level TAs, 4 grants, 19 regional TAs (RETA) and 15 loans, equivalent to \$23.5 million in country-level TA resources, \$11.7 million in grants, \$4.9 million in RETAs, and \$108.8 million in loans (Table 26). These values represent 16.96%, 19.20%, 7.55%, and 13.37%, respectively, of the total external assistance to PDMCs under the different assistance categories.

- (iii) population, waste management, and environmental education;
- (iii) agricultural, marine, and other natural resources such as sustainable fisheries, coastal and marine protection, forestry, watershed management, and biodiversity conservation;
- (iv) energy, climate change, and variability; and
- (v) others, including tourism and related development undertakings.

Activities in the PDMCs have been justified to achieve the five broad strategic objectives embodied in the 2001–2004 ADB strategy for the region (ADB, 2000a). These support

- (i) economic management, governance, and public sector reform;
- (ii) private sector development in the region;

Table 26: Summary of ADB Environment-Related Assistance to PDMCs, 1992–2002

ADB Assistance	Number (\$ Amount)	Institutional Strengthening/ Capability Building ^a	Social Infrastructure ^b	Agriculture, Marine, and other Natural Resources ^c	Energy, Climate Change, and Variability	Others ^d
Country-Level TAs	53 (23,530,200)	6 (1,880,000)	22 (11,213,200)	19 (8,782,000)	4 (1,100,000)	2 (555,000)
Country-Level Grants	4 (11,740,000)	0	3 (10,740,000)	1 (1,000,000)	0	0
RETAs	19 (4,897,000)	7 (929,000)	2 (900,000)	5 (996,000)	4 (1,672,000)	1 (400,000)
Loans	15 (108,801,000)	0	8 (80,935,000)	5 (25,066,000)	1 (2,000,000)	1 (800,000)

^a Refers to the strengthening of governments' environment offices (and other environment-related departments) in the Pacific.

^b Includes subsectors on water supply and sanitation, urban development, health and population, waste management, and environmental education.

^c Includes subsectors on sustainable fisheries, coastal and marine protection, forestry, watershed management, and biodiversity conservation.

^d Includes subsectors on tourism and other development undertakings.

RETA = regional technical assistance.

These activities can be grouped into five major categories or sectors of support:

- (i) institutional strengthening and capability building;
- (ii) social infrastructure, including water supply and sanitation, urban development, health care and

- (iii) a more active role for women in the social, economic, and political spheres;
- (iv) sustainable environmental management; and
- (v) poverty reduction as a unifying theme.

All environment-related assistance also should help meet the overarching goal of reducing poverty in the PDMCs.

²⁹ ADB divides its TA into advisory TAs and project preparatory TAs. Its TAs, including regional TAs, are grant-financed.

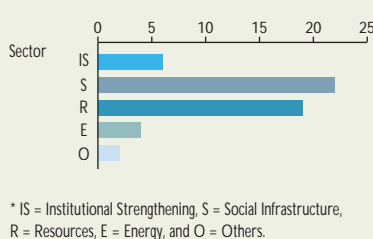
³⁰ 1992 was used as the baseline year because of the Earth Summit (UNCED) held that year in Rio de Janeiro, Brazil.

The assistance identified in this section includes that provided by ADB to PDMCs from 1992 to 2002.³⁰ While some projects are relatively easy to identify as environmental in nature, for others it is less clear. Any project with environmental improvement as an explicit objective or having a component on environmental management (i.e., environmental quality protection or conservation) has been included in the assessment.

At the country level, 22 TAs for the social infrastructure sector (more than 40% of the total) were implemented to improve and facilitate urban and infrastructure development in PDMCs, particularly water supply and sewerage systems, health, sanitation, solid waste management, and other public services. The focus of ADB TAs in this sector is reflected in ADB investments in the Pacific, as shown in later sections. The agriculture, marine, and other natural resources sector had the second largest number of TAs, with a total of 19 (35%). These related primarily to sustainable fisheries management and development, marine and coastal resources protection, strengthening of agriculture and forestry government offices, watershed management, and marine biodiversity conservation. Several TAs (about 11% of the total) focused on capacity building, environmental awareness, and institutional strengthening of key government agencies (and to some extent also the private sector). The rest were for energy, climate change, and variability (4 TAs), most of which were implemented to support power sector development requirements. Two TAs with environmental content dealt with tourism and outer island infrastructure development and were categorized under the “other” sector (see Figure 3). A complete list of environment-related TAs is found in Table 27.

Table 28 lists the four grant projects to PDMCs from 1992 to 2002. Although only four grants have been funded, the total amount is almost half that of the country-level TAs. It should be noted that three of these grants have been provided for rehabilitation work in Timor-Leste, which is included in ADB’s database on Pacific countries.

Figure 3: Country-Level TAs by Sector*

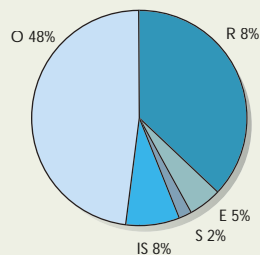


The proportional distribution of TA financial resources corresponds closely to the absolute number of TAs for each sector. Amounts for social infrastructure and agriculture and natural resources sectors were 47% and

37%, respectively, of total financial assistance. The remaining 11% of the TA value was distributed among the other sectors (Figure 4).

The majority of RETAs were in the institutional strengthening and capacity building sector. RETAs have been a major

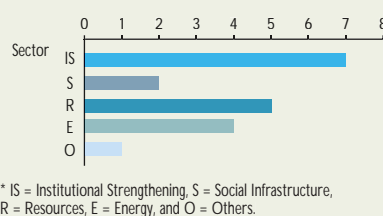
Figure 4: Value of Country-Level TAs by Sector*



* IS = Institutional Strengthening, S = Social Infrastructure, R = Resources, E = Energy, and O = Others.

avenue for ADB’s assistance to environment agencies in PDMCs. This is followed by the agriculture, marine and other natural resources sector, with 5 RETAs; and the energy, climate change, and variability sector, with 4 RETAs. In contrast with the country-level allocations, the social infrastructure sector received only 2 RETAs, while 1 RETA was classified under the “other” sector (Figure 5). In terms of their financial value, the energy, climate change, and variability sector captured 34% of total RETA spending, reflecting larger amounts placed in these RETAs. The remaining 60% was divided almost equally among agriculture, marine and other natural resources, institutional strengthening and capacity building, and social infrastructure sectors. About 8% was classified under others (Figure 6). Table 29 provides a list of RETAs provided to PDMCs from 1992 to 2002.

Figure 5: Environment-Related RETAs by Sector*

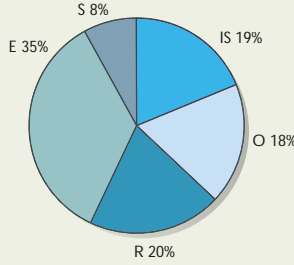


Investment spending shows that environment-oriented loan projects have centered largely on more traditional forms. More than half of loan projects are in the social infrastructure sector. In addition, a significant number of loans (33%) were processed in the agriculture,

marine, and other natural resources sector. These correspond to areas that have commanded higher levels of loan-financed investment in the region. Of a total of 15 loan projects classified as environment-related, only two are not under these two sectors (Figure 7). It can be noted, however, that the total value of lending is relatively small—amounting to only \$108.8 million over a 10-year period. No loans were provided specifically for biodiversity conservation, capacity building, tourism, or climate change, which could be a reflection of PDMC governments’ reluctance to borrow for projects with low rates of financial return (Figure 8). Environment-oriented loan projects for PDMCs are listed in Table 30.

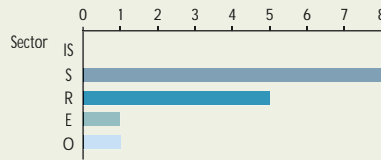
In addition to these absolute figures for the 10-year period of analysis, some trends in ADB’s assistance patterns can also be detected. The first phase of ADB’s environmental assistance in the early 1990s focused on helping PDMCs prepare NEMS as frameworks for further action. This was accomplished through a combination of country-level TAs and RETAs. The emphasis then shifted to more specific sector work, notably relating to forestry, biodiversity, environmental aspects of energy, fisheries, and, more recently, water management. Current assistance centers on mainstreaming environmental considerations into key development sectors, and in future years stand-alone environmental assistance may no longer be apparent. Moreover, a significant planning effort is building on previous energy sector work to identify market-proven renewable energy sources and to help PDMCs adapt to climate change and variability. These trends are reflected in specific country experiences that are documented in Appendix 4.

Figure 6: Value of Environment-Related RETAs by Sector*



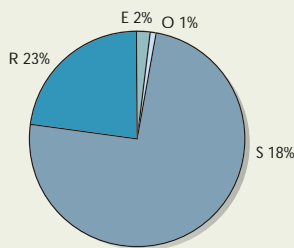
* IS = Institutional Strengthening, S = Social Infrastructure, R = Resources, E = Energy, and O = Others.

Figure 7: Environment-Related Loans by Sector*



* IS = Institutional Strengthening, S = Social Infrastructure, R = Resources, E = Energy, and O = Others.

Figure 8: Value of Environment-Related Loans by Sector*



* R = Resources, E = Energy, S = Social Infrastructure, and O = Others.

Lessons Learned from ADB’s Experience

A number of lessons can be drawn from the experience with ADB’s environment-oriented assistance. Insights relate to the design, organization, implementation, and performance measurement of environmental interventions.³¹

Conflict Between State and Local Norms. In many cases, differences have been encountered between national environmental authorities and local groups in implementing state-imposed regulations such as EIAs. In PNG, for example, technical assistance was provided to the Department of Environment and Conservation for preparing, reviewing, and administering EIAs (ADB 1993a), but the newly trained officials ran into difficulties enforcing the regulations when they confronted established tenure norms, customs, and traditions. They also did not consider the limited capacities of understaffed environmental agencies. This and similar experiences illustrate the need to fully consider such local norms and to engage with those who represent or understand these perspectives when preparing new regulations.

Environmental Legislation. Several ADB efforts have been designed to help along the process of establishing effective national environmental legislation. A loan and TA in Kiribati were instrumental

³¹ These lessons are specifically drawn from ADB’s experience. A summary of further lessons based on the experience of others and also drawing, in part, from ADB’s experience is presented at the end of the next section.

Table 27: Environment-Related Technical Assistance, 1992–2002

TA No.	Project	Date Approved	Approved Amount (\$) and Source of Funding		Type
Cook Islands					
2070	Integrated Urban Infrastructure	1994	455,000	JSF	S
2144	Lagoon Ecology Monitoring and Management	1994	552,000	JSF	R
2264	Outer Islands Power Development Study	1994	250,000	JSF	E
2322	Outer Islands Marine Resources Management Training	1995	300,000	TASF	R
3085	Urban Infrastructure	1998	750,000	JSF	S
Subtotal (5 TAs)			2,307,000		
East Timor (now Timor-Leste)					
3501	Environmental Assessment Capacity Improvement	2000	250,000	TASF	IS
3748	Power Sector Development Plan (Phase I)	2001	400,000	JSF	E
3986	Integrated Water Resources Management	2002	600,000	TASF	S
Subtotal (3 TAs)			1,250,000		
Fiji Islands					
1848	Institutional Strengthening of the Forestry Economics Unit	1993	263,000	JSF	R
2034	Management Information System for the Ministry of Agriculture, Fisheries and Forestry	1993	570,000	JSF	R
2180	Environmental Awareness, Legislation and Database	1994	450,000	TASF	IS
3055	Suva-Nausori Water Supply and Sewerage	1998	800,000	JSF	S
3243	Urban Sector Strategy Study	1999	670,000	TASF	S
3424	Capacity Building of the Native Land Trust Board in Preparing Land Maps and Establishing Land Boundaries	2000	140,000	TASF	IS
Subtotal (6 TAs)			2,893,000		
Kiribati					
2199	Institutional Strengthening of the Environment Unit	1994	440,000	TASF	IS
2497	Sanitation and Public Health	1995	577,000	JSF	S
2641	Environmental Improvement for Sanitation and Public Health	1996	72,500	TASF	S
3108	Management and Financial Advisory Services for the Public Utilities Board	1998	1,200,000	TASF	S
3109	Community Development and Participation Initiatives	1998	300,000	TASF	S
3838	Community Development and Sustainable Participation	2002	420,700	TASF	S
Subtotal (6 TAs)			3,010,200		
Marshall Islands					
1826	Institutional Strengthening of the Environmental Protection Authority	1992	300,000	JSF	IS
1946	Institutional Strengthening of the Majuro Water and Sewer Company	1993	250,000	TASF	S
2065	Nonformal Environmental Education	1994	300,000	TASF	IS
2349	National Fisheries Development Plan	1995	600,000	TASF	R
2483	Tourism Development	1995	405,000	JSF	O
2483	Tourism Development (Supplementary)	1997	150,000	TASF	O
2854	Fisheries Management	1997	598,000	JSF	R
3522	Community-Based Coastal Marine Resources Development	2000	298,000	TASF	R
Subtotal (8 TAs)			2,901,000		
Federated States of Micronesia					
1925	Watershed Management and Environment	1993	585,000	JSF	R
1965	Marine Resources Management and Conservation	1993	520,000	TASF	R
2137	Water Supply and Sewerage	1994	250,000	JSF	S

continued next page

Table 27: Environment-Related Technical Assistance, 1992–2002 (continued)

TA No.	Project	Date Approved	Approved Amount (\$) and Source of Funding		Type
Federated States of Micronesia (cont'd)					
2646	Capacity Building for Management and Operation of Water Supply and Sanitation Systems	1996	587,000	TASF	S
2832	Fisheries Management and Development	1997	934,000	JSF	R
	Subtotal (5 TAs)		2,876,000		
Papua New Guinea					
1990	Environmentally Sustainable Management of Coastal and Marine Resources	1993	599,000	JSF	R
2022	Institutional Strengthening of Department of Fisheries and Marine Resources	1993	883,000	JSF	R
2258	Fisheries Management	1994	460,000	TASF	R
2258	Fisheries Management Study (Supplementary)	1996	140,000	TASF	R
3173	Provincial Towns Water Supply and Sanitation	1999	908,000	TASF	S
3604	Coastal Fisheries Management and Development	2000	340,000	JSF	R
	Subtotal (6 TAs)		3,330,000		
Samoa					
2480	Integrated Urban Development	1995	552,000	JSF	S
3044	Evaluation of Sewage Treatment Options	1998	115,000	TASF	S
3566	Capacity Building for Urban Planning and Management	2000	500,000	JSF	S
3808	Strengthening Energy Loss Reduction and Maintenance Management Capacity of the Electric Power Corporation	2001	150,000	TASF	E
3860	Implementation of the Urban Planning and Management Strategy	2002	400,000	TASF	S
3985	Savai'i Renewable Energy	2002	300,000	JSF	E
	Subtotal (6 TAs)		2,017,000		
Solomon Islands					
3237	Fisheries Management and Development	1999	290,000	TASF	R
3277	Marine Biodiversity Conservation	1999	150,000	GEF	R
	Sub-total (2 TAs)		440,000		
Tonga					
2467	Capacity Strengthening of the Ministry of Agriculture and Forestry	1995	600,000	JSF	R
	Subtotal (1 TA)		600,000		
Tuvalu					
1992	Fisheries Sector Study	1993	100,000	TASF	R
2319	Urban Planning and Environment Management	1995	310,000	JSF	S
	Subtotal (2 TAs)		410,000		
Vanuatu					
1952	Urban Infrastructure	1993	536,000	JSF	S
2596	Urban Growth Management Strategy for Port Vila	1996	600,000	TASF	S
2597	Sanitation Master Plan for Port Vila	1996	360,000	JSF	S
	Subtotal (3 TAs)		1,496,000		
Total	(53 TAs)		23,530,200		

IS = institutional strengthening and capability building; S = social infrastructure (including water supply and sanitation, urban development, health and population, waste management, and environmental education); R = agricultural, marine, and other natural resources (including sustainable fisheries, coastal and marine protection, forestry, watershed management, and biodiversity conservation); E = energy, climate change, and variability; and O-others (including tourism and related development undertakings).

JSF = Japan Special Fund; TASF = Technical Assistance Special Fund; GEF = Global Environment Facility; TA = Technical Assistance.

Table 28: Environment-Related Grants, 1992–2002

TA No.	Project	Date Approved	Approved Amount (\$) and Source of Funding		Type
East Timor (now Timor-Leste)					
8190	Hera Port Fisheries Facilities Rehabilitation Project	2001	1,000,000	TFET	R
8185	Water Supply and Sanitation Rehabilitation Project (Phase I)	2000	4,500,000	TFET	S
8189	Water Supply and Sanitation Project (Phase II)	2001	4,500,000	TFET	S
Subtotal			10,000,000		
Papua New Guinea					
9002	Low-Cost Sanitation, Community Awareness, and Health Education Program	2000	1,740,000	JFPR	S
Total			11,740,000		

S = social infrastructure (including water supply and sanitation, urban development, health and population, waste management, and environmental education); and R = agricultural, marine, and other natural resources (including sustainable fisheries, coastal and marine protection, forestry, watershed management, and biodiversity conservation).
TFET = Trust Fund for East Timor; JFPR = Japan Fund for Poverty Reduction.

in passing the Public Utilities Board Act and the Environmental Act (ADB 1998). In FSM, a TA on marine conservation likewise played a crucial role in supporting the drafting of the Model State Fisheries Law (ADB 1993c), while in Vanuatu a TA on urban growth management helped in drafting the Environment Act, Water Resources Management Act, and Building Act (ADB 1996).

Along with successes have come failures in assistance for legislation; these are largely due to the suggested use of overly complex legal frameworks based on models from outside the Pacific. The other major challenge encountered in this regard has been the need for consensus building and the development of broad-based political commitment through an active participatory and consultative review process. An advisory TA for the Fiji Islands with objectives to strengthen the institutional capability of the Department of Environment helped prepare comprehensive environmental legislation and an environmental information system (ADB, 1994a). Though successful in enhancing appreciation for environmental issues in the Fiji Islands through its environmental awareness component and public consultations from the preparation of a draft Sustainable Development Bill, the complexity of the draft legislation has meant that it has not been passed despite 8 years of effort.

Institutional Strengthening and Public Participation.

Institutional strengthening is a long and arduous process. It becomes even more time-consuming when implemented in a participatory and consultative manner, although hard-won experience shows this to be the most effective and appropriate approach. Also, projects should not be supported unless the institutional setting is adequate to the tasks of implementation, as community and social dimensions normally require an efficient, or at least sufficiently functional, institutional support framework. In Papua New Guinea, the provision of an advisory TA strengthening the Department of Fisheries and Marine Resources showed that institutional weaknesses caused the failure of community-based fisheries projects. (ADB 1993a).

In FSM, an advisory TA was provided to catalyze public consultation and participation. The principal objective of the TA was to assist the Pohnpei State government to improve the watershed environment through a community participatory approach (ADB 1993c). The approach was found effective, particularly when handled by competent practitioners. The lesson was that this should be balanced by stimulation of political leaders and government planners to instill in them an equal sense of project “ownership,” and to ensure that the impetus to foster a community participatory approach

Table 29: Regional Environment-Related Technical Assistance, 1992–2002

RETA No.	Project	Date Approved	Approved Amount (\$) and Source of Funding	Type
5491	Regional Study of Financing Mechanisms for DMC Environmental Programs and Projects	1992	100,000	Study/IS
5542	Regional Study of Environmental Indicators and Indexes	1993	137,000	Study/IS
5555	Institutional Strengthening and Collection of Environment Statistics in Selected DMCs	1993	165,000	Training/IS
5557	Regional Conference for Biodiversity Conservation	1993	40,000	Conference/R
5585	Ministerial Level Conference on the Environment and Development and Preparation of the State of Environment Report	1994	90,000	Conference/IS
5591	Study of Status of Forestry and Forest Industries in the Asian and Pacific Region	1994	39,000	Study/R
5591	Study of Status of Forestry and Forest Industries in the Asian and Pacific Region (Supplementary)	1997	4,000 Finland	Study/R
5627	Regional Workshop on Solar Power Generation using Photovoltaic Technology	1995	88,000	Conference/E
5658	Capacity Building for Environmental Law Training in the Asia and Pacific Region	1995	120,000 JSF	Training/IS
5815	Development of an International Fisheries Agreement on the Conservation and Management of Tuna in Western and Central Pacific	1998	698,000	R
5816	Mayors' Asia-Pacific Environmental Summit	1998	17,000	Conference/IS
5883	Performance Benchmarking for Pacific Power and Water Utilities	1999	250,000	E
5896	Strengthening the Live Reef Fish Trade Management in the PDMCs	1999	215,000	Study/R
5913	Capacity Building to Promote Traditional Environmental Management in the PDMCs	2000	300,000 JSF	Study/IS
5939	Strategies for Poverty Reduction through Urban Environmental Improvement	2000	100,000 JSF	Study/S
5972	Promotion of Renewable Energy, Energy Efficiency, and Greenhouse Gas Abatement Projects	2001	334,000 Netherlands (\$4.5 million)	E
6031	Promoting Effective Water Management Policies and Practices	2002	800,000 Cooperation Fund for the Waters Sector	S
6039	Formulation of the Pacific Region Environmental Strategy 2004–2008	2002	400,000 New Zealand	Study/O
6064	Climate Change Adaptation Program for the Pacific	2002	1,000,000 Canada	Study/E
Total			4,897,000	

IS = institutional strengthening and capability building; S = social infrastructure (including water supply and sanitation, urban development, health and population, waste management, and environmental education); R = agricultural, marine, and other natural resources (including sustainable fisheries, coastal and marine protection, forestry, watershed management, and biodiversity conservation); E = energy, climate change, and variability; and O = others (including tourism and related development undertakings). DMC = developing member country; PDMC = Pacific developing member country.

Table 30: Environment-Related Lending, 1992–2001

Loan No.	Project	Date Approved	Approved Amount (\$)	Type
Cook Islands				
1309	Pearl Industry Development	1994	817,000	R
1588	Cyclone Emergency Rehabilitation Project	2001	800,000	O
1832	Waste Management		2,200,000	S
Kiribati				
1648	Sanitation, Public Health, and Environment Improvement	1998	10,240,000	S
Marshall Islands				
1389	Majuro Water Supply and Sanitation	1995	9,200,000	S
1694	Ebeye Health and Infrastructure	1999	9,250,000	S
Federated States of Micronesia				
1257	Fisheries Development	1993	6,500,000	R
1459	Water Supply and Sanitation	1996	10,600,000	S
Papua New Guinea				
1211	Third Urban Water Supply	1992	11,300,000	S
1656	Fisheries Development	1998	6,514,000	R
1812	Provincial Towns Water Supply and Sanitation	2000	15,345,000	S
1652	Smallholder Support Services Pilot Project	1998	7,600,000	R
Samoa				
1228	Afulilo Hydroelectric Power (Supplementary)	1993	2,000,000	E
Tonga				
1412	Outer Islands Agriculture Development	1995	3,635,000	R
Vanuatu				
1448	Urban Infrastructure	1996	12,800,000	S
Total			108,801,000	

S = social infrastructure (including water supply and sanitation, urban development, health and population, waste management, and environmental education); R = agricultural, marine, and other natural resources (including sustainable fisheries, coastal and marine protection, forestry, watershed management, and biodiversity conservation); E = energy, climate change, and variability; and O = others (including tourism and related development undertakings).

is sustained when external assistance is withdrawn. Such stimulation requires capable project implementers and strong awareness campaigns. Otherwise, as noted from a RETA supporting the expanded use of photovoltaic energy (ADB 1995b), poor understanding of the importance of a development technology by local people (assuming it is sound) results in low levels of adoption.

Consensus Management. In Samoa, an advisory TA was able to achieve consensus on an urban management institutional approach that reflects the cultural and institutional needs of the country (ADB 2000b). Through the implementation of a new, integrated urban planning

and management system, the Planning and Urban Management Agency was established with a high-level management board responsible for policymaking and implementation of urban development projects. The experience underlines the importance of the consultative process to achieve stakeholder participation and commitment. Moreover, not only institutional but also cultural needs must be met in order for a project to succeed.

Monitoring Systems. A blend of TA and lending in the Cook Islands associated with development of the black pearl culture industry successfully designed and

implemented field monitoring norms for coastal and marine resources, especially of lagoons, to measure long-term productivity (ADB 1994b). The experience suggests that implementation of sustainable monitoring schemes is possible in such circumstances, especially where the direct costs of ecological failure are very high.

Institutions for Resource Management. On the other hand, the institutional aspects of the pearl farming assistance in the Cook Islands suffered from a number of problems. A management structure was imposed from the top, rather than based on consensus, and the ensuing difficulties indicate that a good balance must be struck between top-down and bottom-up management systems for the organization of resource-based production and marketing.

A TA implemented in Marshall Islands was successful in transforming a typical government institution, the Marshall Islands Marine Resource Authority, into a self-funding agency (ADB 1995d). This experience holds promise for replication in other PDMCs. As a result of strengthening the Marshall Islands Visitors Authority in business planning, a Business Plan developed under a TA was instrumental in the approval of a new Tourism Amendment Act and related bylaws (ADB 1995a).

Market Feasibility. The realities of market forces must be considered in full during project conceptualization and design. A TA in the Marshall Islands on small-scale marine resource-based activities, for example, was terminated after market research concluded that there were no economically viable opportunities (ADB 2000f). Many technically oriented projects are based on models developed outside the Pacific and/or lack sufficient grounding in the realities of market forces, and it is not surprising that they prove to be unsustainable. On the other hand, experience in Tonga with a TA promoting agricultural diversification showed that small farmers were economically motivated and showed positive response to commercial opportunities provided by a TA promoting agricultural diversification, as long as the market for agricultural products was available (ADB 1995c).

Private Sector Participation and Privatization. Strong private sector participation—alongside all elements of civil society—is essential in the preparation of new policies and programs for environmental and natural resource management. However, a careful balance must be struck between the temptation to privatize for

provision of environmental and other services to achieve cost recovery and the need to meet basic human needs (such as water supply for the poorest communities). Replacing public with private monopolies rarely results in better or more equitable services. Experience in the Marshall Islands with a TA for institutional reform and strengthening in the Majuro Water and Sewer Company reconfirms that these activities are crucial to any moves to strengthen private sector participation in the provision of environmental services (ADB 1993f).

An advisory TA (ADB 1993d) to the Fiji Islands aimed at activating and strengthening the Forestry Economic Unit of the Forest Department. Due to the political conflict, personnel turnover has been constant, disrupting project activities. The experience suggests that for project continuity, management and staffing should involve independent private sector parties. The private sector can then continue management and even implementation.

Human Resources Capacity. Many of ADB's environment-related activities in the region have suffered from an overestimation of counterpart staff skills at the country level. Constant turnover of personnel is another common and closely related problem. This suggests that special attention must be given to capacity building in all projects, while also ensuring the availability of key counterpart staff for the implementation of specific projects. Continuing training programs are needed to train replacement staff whenever there is a high staff turnover rate. For example, a TA in Kiribati to strengthen the capability of the Environment Unit in undertaking EIA and environmental data management encountered serious difficulties due to a lack of counterpart staff and a cohesive consulting team (ADB 1994c).

As a newly established country, Timor-Leste has limited technical capacity in enforcing environmental laws and regulations. In order to address this deficiency, ADB in April 2001 implemented an advisory TA to strengthen the capability of the environment agency to review, evaluate, and monitor the enforcement and implementation of environmental management laws, regulations, and standards appropriate to Timor-Leste (ADB 2000a). The TA was completed in October 2002 and successfully attained its objective of developing and supporting the capacity of the national Division of Environment, particularly in carrying out EIA, monitoring, and promoting sustainable development. This was

achieved through (i) training staff in environmental management; (ii) developing a plan for implementing an environmental management institution; (iii) reviewing the environmental and natural resources management regulations currently applied in Timor-Leste and recommending appropriate amendments; (iv) preparing environmental profiles; and (v) identifying procedures for the development and use of environmental indicators in environmental reporting. This was no small accomplishment, as the country is literally starting from scratch with such institutions.

Regional Cooperation. Many environmental problems and issues in the Pacific are either transboundary in nature or are common to a large number of countries and hence deserve attention at a regional level. This argues for strong regional institutions that can address

these problems and also for good coordination and information dissemination mechanisms to avoid duplication and enhance the Pacific-wide benefits of knowledge gained through regional cooperation in environmental management. An example of a workable regional approach is ADB's RETA for Institutional Strengthening and Collection of Environment Statistics in Selected DMCs (ADB 1993b).

The dilemma posed by this approach is that PDMCs may resent significant portions of external assistance being channeled through regional organizations. It could also be argued that regional organizations have increasingly used such assistance to build up their own capacities, rather than delivering full services to PDMCs or devoting sufficient attention to the strengthening of indigenous counterpart institutions.



CHAPTER 4

Patterns of and Lessons from External Environmental Assistance

Environmental Assistance and Lessons Learned

In addition to the lessons that can be drawn from ADB's own experience with environment-oriented assistance to PDMCs, insights may also be drawn from the activities of other international agencies. This section reviews the patterns of environment-related assistance to Pacific island countries from major external funding agencies, based on the results of a survey and from secondary sources. Special attention is also given to projects financed by GEF and to those implemented through SPREP because of their significance in the region. Lessons are derived based on the combined experience assessed.

Assistance from External Agencies other than ADB

A number of external assistance agencies actively support efforts to improve environmental management in the Pacific. Among bilateral donors, Australia, Canada, France, Germany, Japan, New Zealand, and the US are most notable. Attempts to determine the extent of environmental aid from publicly available documents on projects supported by external agencies were frustrated by the general lack of identification of which projects are environment-oriented. As part of formulating the PRES, therefore, survey questionnaires were distributed to external agencies concerning their main objectives and activities relating to improving environmental management in the region. Replies were obtained from 10 external assistance organizations;³² additional information was gleaned from secondary sources. Supplemental information was taken from the list of "Climate Roundtable: Matrix of Projects"³³ specifically funded by Canadian International Development Agency, the United States National Oceanographic and Atmospheric Administration, and NZAID, as well as other aid providers.³⁴

While the information obtained from this exercise cannot be considered exhaustive of environment-

oriented external assistance in the Pacific region, it does give a strong indication of the thrust of ongoing (through 2002) environmental external assistance projects, which is an important consideration in developing ADB's environmental strategy for the Pacific region.

Based on the survey and supplemental information, projects were classified into two broad groups—country-level and multiple-country (regional) projects. According to these categories, 64 ongoing country-level projects were identified, with a total value of \$110.7 million, and 51 regional projects, valued at \$96.8 million. This brings the total level of ongoing external assistance activities in the Pacific to \$207.5 million in 115 projects. Following the same pattern of analysis as employed in the previous analyses of ADB's environmental assistance to the region, these projects have been grouped into five major categories or sectors of support:

- (i) institutional strengthening and capacity building;
- (ii) social infrastructure including water supply and sanitation, urban development, health and population, waste management, and environmental education;
- (iii) agricultural, marine, and other natural resources such as sustainable fisheries, coastal and marine protection, forestry, watershed management, and biodiversity conservation;
- (iv) energy, climate change, and variability; and
- (v) others, including tourism and related development undertakings (Table 31).

Country-level projects are listed in Table 32, which provides information as to time frame, amount of funding, financing source, and type of project (according to the same five categories of activity).

Country-level projects when grouped by category follow a pattern similar to that of the environmental assistance provided by ADB. In terms of their number (Figure 9), most projects (75%) fall into the two categories of either agricultural, marine, and other natural resources or social infrastructure. The remaining projects fell under energy, climate change, and variability (11%), institutional strengthening and capacity building (9%), and others (5%). The trend is the same in terms of their value (Figure 10), though the amounts are more skewed toward agricultural, marine, and other natural resources (50%) and social infrastructure (40%). These sectors not only comprise the largest number of projects

³² AusAID, FAO-Subregional Office for the Pacific Islands, GTZ, JICA, SPC, UNDP, UNEP, United Nations Development Fund for Women, United States Agency for International Development East Asia and Pacific Environmental Initiative, and the World Bank.

³³ This matrix was compiled by ADB in connection with its newly implemented RETA (No. 6064), Climate Change Adaptation Program for the Pacific.

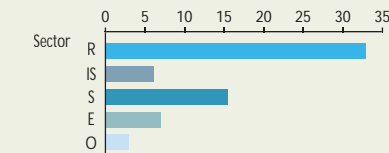
³⁴ NZAID's website provided most of the information used.

Table 31: Summary of Ongoing External Assistance

	Country-Level		Regional		Overall	
	Amount (\$)	No.	Amount (\$)	No.	Amount (\$)	No.
Resources ^a	54,734,443	33	43,472,863	20	98,207,306	53
Institutional Strengthening ^b	2,224,320	6	34,443,360	15	36,667,680	21
Social Infrastructure ^c	44,332,179	15	5,076,077	3	49,408,256	18
Energy ^d	8,996,180	7	13,714,710	11	22,710,890	18 =
Others ^e	417,093	3	85,000	2	502,093	5
Total	110,704,215	64	96,792,010	51	207,496,225	115

^a includes agricultural, marine and other natural resources (sustainable fisheries, coastal and marine protection, forestry, watershed management, and biodiversity conservation); ^b includes capacity building; ^c includes water supply and sanitation, urban development, health and population, waste management, and environmental education; ^d includes climate change and variability; and ^e includes tourism and related development undertakings.

Figure 9: Number of Country-Level External Assistance by Sector*

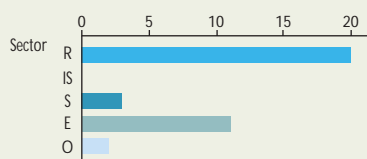


* R = Resources, IS = Institutional Strengthening, S = Social Infrastructure, E = Energy, and O = Others.

and largest average values, but they also get the most resources—with social infrastructure projects averaging \$3 million per project, and agricultural, marine and other natural resources projects \$1.7 million. Energy, climate change and variability, institutional strengthening and capacity building, and others had average values of \$1.3 million, \$0.4 million, and \$0.1 million, respectively.

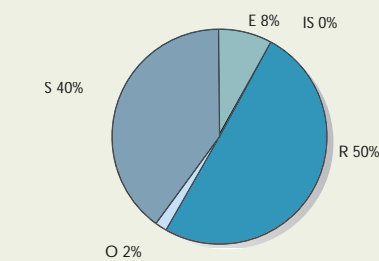
Regional external assistance also mostly fell into the two categories: agricultural, marine, and other natural resources or institutional strengthening and capacity building, with a 45% and 36% share, respectively, in terms of total value of assistance.

Figure 11: Number of Region-Level Assistance by Sector*



* R = Resources, IS = Institutional Strengthening, S = Social Infrastructure, E = Energy, and O = Others.

Figure 10: Value of Country-Level External Assistance by Sector*



* R = Resources, IS = Institutional Strengthening, S = Social Infrastructure, E = Energy, and O = Others.

These are depicted in Figures 11 and 12.

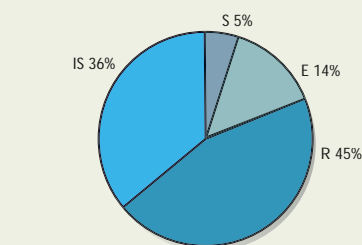
Ongoing regional environment-related external assistance is summarized in Table 33. The average size of the 51 regional projects was about \$2 million, though there were three rather large projects that skewed this number upwards.

The Global Environment Facility

Although the GEF is not an assistance agency, the use of its financial resources by its three implementing agencies (the World Bank, UNDP, and UNEP) has played

a very significant role in shaping environmental management in PDMCs over the past decade. Established as the financing mechanism for key global environmental conventions, the GEF has been a major, if

Figure 12: Value of Region-Level External Assistance by Sector*



* R = Resources, IS = Institutional Strengthening, S = Social Infrastructure, E = Energy, and O = Others.

Table 32: Ongoing Environment-Oriented External Assistance (Country-Level)

Project	Time Frame	Fund (\$)	Donor	Type
Cook Islands		1,328,943		
Marine Industry Master Plan	2003	483,252	NZAID	R
Hospitality and Tourism Training Centre	2003	86,295	NZAID	O
Outer Islands Infrastructure	2003	759,396	NZAID	S
Fiji Islands		21,873,820		
Renewable Energy Service Companies for Rural Electrification in Fiji	2000–2003	1,410,000	UNDP*	E
Institutional Strengthening	1994–2004	166,820	UNEP	IS
Training of Extension Staff in Post-Harvest Handling and Marketing of Fresh Horticultural Produce	Ongoing	205,000	FAO-SAPA	R
Enhancement of Customary Marine Fishery Tenure	Ongoing	60,000	FAO-SAPA	R
Smallholder Forage Based Dairy Production	Ongoing	368,000	FAO-SAPA	R
Towards a Conservation Strategy for the Tropical Forests of Fiji	2002–2004	400,000	USAID	R
Nadi-Lautoka Water Supply Improvement Project	1997–2003	19,200,000	Japan/ JICA	S
Rural School Water Supply Project	2003	64,000	Japan/ JICA	S
Kiribati		4,809,776		
Kiribati Adaptation Project	2003-2008	4,395,580	WB*	E
Management of Rats in Coconut Plantations	Ongoing	279,000	FAO-SAPA	R
Marine Training Centre	2003	135,196	NZAID	R
Marshall Islands		412,000		
Seaweed Cultivation in Marshall Islands	Ongoing	156,000	FAO-SAPA	R
Assistance to Small-Scale Atoll Farmers Cultivating Sigatoka Disease-Free Bananas for Food Security in the Marshall Islands	Ongoing	256,000	FAO-SAPA	R
Micronesia, Federated States of		None		
Nauru		135,000		
Strengthening Integrated Pest Management of Coconut Hispid Beetle (<i>Brontispa longissima Gestro</i>) in Nauru	Ongoing	135,000	FAO-SAPA	R
Papua New Guinea		59,271,552		
GEF- Small Grants Programme on Conservation and Restoration of Natural Resources and Enhancement of Well-being and Livelihood Opportunities	1999–2002	350,000	UNDP	R, IS
Application of GIS to Land Use Management in Papua New Guinea: Remote Sensing Land Use Initiative	2002–2004	1,296,500	UNDP*	IS
Climate Change Enabling Activity Project	1998–2002	345,600	UNDP	E
Capacity Building for Improved Agricultural Marketing and Farm Management	Ongoing	260,000	FAO-SAPA	R
Small-Scale Rice Farming Promotion Project	2003–2007	—	Japan/JICA	R
Lae City Water Supply Project	2000–2004	13,447,200	AusAID	S
Mama Graun Conservation Trust Fund	1991–2006	4,620,000	AusAID*	R
Forestry Human Resource Development	1995–2003	12,000,000	AusAID	R
National Fisheries College	1997–2003	4,500,000	AusAID	R
Renewable Resource Program Development	1994–2004	720,000	AusAID	E
ACIAR Research and Development Trust Fund	1998–2003	5,100,000	AusAID	R
Rural Development and Planning	2001–2004	900,000	AusAID	R
Australian Contribution to a National Agriculture Research System	1995–2003	9,180,000	AusAID	R
Bougainville Cocoa and Copra Drier Rehabilitation	1998–2003	2,700,000	AusAID	R
Bougainville Cocoa Rehabilitation Project	1999–2003	1,719,000	AusAID*	R
South Fly Community Development Program	200–2004	1,650,000	AusAID	S
Health Sector Improvement Programme	2003	287,650	NZAID	S
Agricultural Institutional Strengthening Project	2003	195,602	NZAID	R

continued next page

Table 32: Ongoing Environment-Oriented External Assistance (Country-Level) (continued)

Project	Time Frame	Fund (\$)	Donor	Type
Samoa		11,221,568		
Coastal Infrastructure Management component of Samoa Infrastructure Asset Management Project	1999–2009	4,900,000	WB*	R
Samoa Marine Biodiversity and Management Project	1999–2004	899,978	WB*	R
Initial Assistance to Samoa to meet its obligations under the Stockholm Convention on Persistent Organic Pollutants	2001–2003	372,000	UNDP	R, S
Institutional Strengthening	1994–2004	70,000	UNEP	IS
Re-establishing Samoa's Traditional Staple Food "Taro" through Rapid Propagation of Leaf Blight Tolerant Varieties	Ongoing	182,000	FAO-SAPA	
Strengthening the Institutional Capacity of the Samoa Forestry Division to Effectively Plan and Manage Forest Resources	Ongoing	234,000	FAO-SAPA	IS, R
Improvement of Waste Management in the Pacific	2000–2006	—	Japan/JICA	S
Tafa'igata Dumpsite Improvement Project	2003	191,000	Japan/JICA	S
Solid Waste Management Regional Workshops	2000–2004	—	Japan/JICA	S
Samoa-Quarantine Support	2001–2004	2,100,000	AusAID	S
Water Authority Project	1998–2004	2,100,000	AusAID	S
Tourism Support Fund	2003	172,590	NZAID	O
Solomon Islands		3,700,000		
Forestry Management in Solomon Islands	1999–2004	3,700,000	AusAID	R
Tonga		6,968,388		
Tonga Cyclone Emergency Recovery and Risk Management Project	2002–2005	1,800,000	WB	E
Climate Change Enabling Activity Project	2001–2003	325,000	UNDP	E
Agricultural Census and Statistics	Ongoing	161,000	FAO-SAPA	R
Development for Seaweed Farming	Ongoing	143,000	FAO-SAPA	R
Capacity Building in Farm Management, Marketing and Agribusiness for Young Farmer Groups	Ongoing	236,000	FAO-SAPA	IS, R
Marine Parks and Reserve Management Project	2001–2005	—	Japan/JICA	R
Solid Waste Management in Tonga	2003–2007	3,800,000	AusAID	S
'Eua and Vava'u Nature Tourism	2003	158,208	NZAID	O
Forest Plantation Development in Eua	2003	230,120	NZAID	R
Support for Comprehensive Upgrading of Reticulated Water Supplies in Rural Areas	2003	115,060	NZAID	S
Tuvalu		86,295		
Reef Channel Development	2003	86,295	NZAID	R
Vanuatu		886,873		
Capacity Building for Farming System Development in Support of the Special Programme for Food Security and Increase Food Production	Ongoing	221,000	FAO-SAPA	IS, R
Integrated Management of Fruit Piercing Moth on Fruits and Vegetables in Vanuatu	Ongoing	175,000	FAO-SAPA	R
Forage Based Smallholder Dairy Production	Ongoing	255,000	FAO-SAPA	R
Vanuatu Water Resources Project	2003	235,873	NZAID	S
Rural Electrification Project	2003	—	Japan/JICA	E
Total		110,694,215		

* with reported donor partners.

Note: Projects listed with a time frame before 2003 have gone beyond the anticipated time and remain ongoing.

IS = institutional strengthening and capacity building; S = social infrastructure (including water supply and sanitation, urban development, health and population, waste management, and environmental education); R = agricultural, marine and other natural resources (including sustainable fisheries, coastal and marine protection, forestry, watershed management, and biodiversity conservation); E = energy, climate change and variability; and O=others (including tourism and related development undertakings); — = not available. ACIAR = Australian Center for International Agricultural Research; AusAID = Australian Agency for International Development; FAO-SAPA = Food and Agriculture Organisation—Subregional Office for the Pacific Islands; GEF = Global Environment Facility; GIS = geographic information systems; JICA = Japan International Cooperation Agency; NZAID = New Zealand Agency for International Development; UNDP = United Nations Development Programme; UNEP = United Nations Environment Programme; WB = World Bank.

Table 33: Ongoing Environment-Oriented External Assistance (Regional)

Project	Time Frame	Fund(\$)	Donor	Type
Pacific Islands Renewable Energy Projects	2003–2004	811,000	UNDP	E
Impact of Climate Variability and Change on Human Health in Three Island Countries	2001–2003	416,000	NOAA	E
South Pacific Sea-level and Climate Monitoring–Phase III	2000–2005	5,400,000	AusAID	E
National Adaptation Programme of Action Formulation	2002–2005	1,100,000	UNDP	E
Rural Electrification	2003	—	Japan/JICA	E
Pacific Adaptation Program	2000–onward	615,000	WB	E
Vulnerability and Adaptation Initiative	2002–2009	2,400,000	AusAID	E
Disaster Management Unit	2001–2003	750,000	AusAID	E
Meteorology-Enhanced Climate Reduction	2002–2004	750,000	AusAID	E
Enhanced Application of Climate Predictions in Pacific Island Countries	2003–2006	1,300,000	AusAID	E
Disaster Management (thru SOPAC)	2003	172,710	NZAID	E
Capacity Building to Develop Adaptation Measure in PICs	2002–2004	1,300,000	CIDA	IS
Environmental Awareness	ongoing	—	Japan/JICA	IS
National Capacity Self Assessment	2002–2004	2,800,000	UNDP	IS
SIDSNET Regional Component for Pacific	2002–2005	150,000	UNDP	IS
Assistance to SPREP	2003–2005	2,500,000	AusAID	IS
Assistance to SOPAC	2003–2005	3,200,000	AusAID	IS
Assistance to SPC	2003–2005	14,600,000	AusAID	IS
Assistance to Forum Secretariat	2003–2005	3,400,000	AusAID	IS
Pacific Initiative for the Environment	2003–onward	1,150,600	NZAID	IS
Assistance to the Forum Secretariat	2003	1,495,780	NZAID	IS
Assistance to SPC (including project on Plant Genetic Resources Network: Conservation, Access, and Utilization)	2003	2,186,140	NZAID	IS
Assistance to Forum Fisheries Agencies	2003	517,770	NZAID	IS
Assistance to SOPAC	2003	546,535	NZAID	IS
Assistance to SPREP	2003	546,535	NZAID	IS
Environmental Education and Training	2003–2004	50,000	UNEP	IS
Gender and Environmental Impact Assessment of Tourism	2002–2003	85,000	UNIFEM	O
Tourism Development	2000–2004	—	Japan/JICA	O
Plant Genetic Resources Conservation Technology Support for the Pacific Plant Genetic Resources Network	2002–2005	300,000	AusAID	R
East Asia-Pacific Coral Reef Conservation Initiative and the Indo-Pacific Destructive Fishing Reform Initiative	1999–2004	1,881,500	USAID	R
Taro Genetic Resources Conservation and Utilization	1998–2003	3,000,000	AusAID	R
South Pacific Regional Forest Genetic Resources	2001–2005	2,500,000	AusAID	R
Coastal Fisheries Management	2003	—	Japan/JICA	R
Protecting and Managing Reef Fish Spawning Aggregations in the Pacific	1999–2004	685,000	USAID	R
Aquaculture and Stock Enhancement	ongoing	—	Japan/JICA	R
South Pacific Strategic Action Plan	1999–2004	20,118,363	UNDP	R
Regional Training Meat Processing Technology	Ongoing	379,000	FAO-SAPA	R
Strengthening Food Analytical Capabilities in the Pacific Region	Ongoing	351,000	FAO-SAPA	R
National HACCP-based Fish Inspection Systems in the South Pacific	Ongoing	323,000	FAO-SAPA	R
Regional Programme for Food Security–Formulation Assistance	Ongoing	242,000	FAO-SAPA	R
Capacity Building in Codex, Food Regulation and International Food Standards Harmonization	Ongoing	321,000	FAO-SAPA	R
A Study to Evaluate the Benefits and Costs of WTO Membership for the Food, Agriculture, Fishery and Forestry Sectors of Small Island Countries in the Pacific	Ongoing	122,000	FAO-SAPA	R
Support for Improvement of Statistics on Coastal and Sub-Fisheries and Aquaculture	Ongoing	250,000	FAO-SAPA	R
Training on Sustainable Use of Mangrove Resources	2000–2004	—	Japan/JICA	R
Coastal Resources Management Training Course for Pacific Island Countries	2002–2006	—	Japan/JICA	R
Training Course on Preservation of Coral Reef and Sustainable Development	2000–2004	—	Japan/JICA	R
Regional Forestry Project South Pacific	1994–2006	13,000,000	GTZ	R
Biological Pest Control	ongoing	—	GTZ	R
Persistent Organic Pollutants–Phase 2	2003–2007	3,500,000	AusAID	S
Ozone Depleting Substances	2002–2005	788,000	UNEP	S
Pacific Regional Strategy for the Implementation of the Montreal Protocol	2003–2005	788,077	UNEP	S
Total: 51		96,792,010		

Projects listed with a time frame before 2003 have gone beyond the anticipated time and remain ongoing.

IS = institutional strengthening and capacity building; S = social infrastructure (including water supply and sanitation, urban development, health and population, waste management, and environmental education); R = agricultural, marine and other natural resources (including sustainable fisheries, coastal and marine protection, forestry, watershed management, and biodiversity conservation); E = energy, climate change and variability; and O = others (including tourism and related development undertakings); — = not available; and TBD = to be determined. AusAID Australian Agency for International Development; CIDA = Canadian International Development Agency; FAO-SAPA Food and Agriculture Organisation—Subregional Office for the Pacific Islands; GTZ = Deutsche Gesellschaft für Technische Zusammenarbeit (German Agency for Technical Cooperation); HACCP = Hazard Analysis and Critical Control Point; JICA = Japan International Cooperation Agency; NOAA = (United States) National Atmospheric and Oceanic Administration; NZAID = New Zealand Agency for International Development; PIC = Pacific island country; SIDSNET = South Pacific Regional Environment Programme; UNDP = United Nations Development Programme; UNIFEM = United Nations Development Fund for Women; UNEP = United Nations Environment Programme; USAID = United States Agency for International Development; WB = World Bank; WTO = World Trade Organization.

somewhat underutilized, source of financial resources for environmental management activities in the Pacific. Since its inception over a decade ago, the GEF has increased its four focal areas—climate change, biodiversity, international waters, and ozone depletion—to include new responses to land degradation³⁵ and POPs,³⁶ and specific subprograms such as the GEF's Capacity Development Initiative. SIDS, particularly Pacific island countries, have been quite successful in getting the GEF to acknowledge their special circumstances. Special procedures expedite SIDS' access to GEF funding windows, including the International Waters focal area,³⁷ new enabling activities for implementation of the Stockholm Convention, and the Capacity Development Initiative. In 2002, ADB (already a GEF Executing Agency) was recognized by the GEF Council as a *de facto* implementing agency, and was given direct access to GEF financing. This has opened possibilities for additional GEF co-financing of ADB loans.

During the last decade, approximately 40% of the potential maximum amount of GEF-eligible funding for Pacific regional programs has been utilized. GEF's four principal implementation modes are (i) full-sized projects, (ii) medium-sized projects, (iii) small grants, and (iv) "enabling activities" to support basic plans and institutional capacity building. The GEF now increasingly emphasizes its financing's serving a catalytic role, i.e., it is insisting on strong co-financing for all full-sized or medium-sized projects. UNDP has been the implementing agency for most of the GEF-financed activities in the Pacific, while UNEP has led nationally executed enabling activities in the biodiversity and climate change focal areas. ADB has yet to use GEF co-financing in the Pacific region.

The implementing agencies have faced a number of constraints in organizing and carrying out GEF-financed activities in the region (Box 9). In the mid-1990s, the Pacific island countries recognized the potential for weak coordination and outright competition over GEF resources, and a conference was held to develop a common approach. In 1995, government and nongovernment organizations adopted a Pacific Island Strategy for GEF as a framework for action (Box 10).

³⁵ United Nations Convention to Combat Desertification (<http://www.unccd.org.main.php>).

³⁶ Covered by the Stockholm Convention on Persistent Organic Pollutants (<http://www.pops.int>).

³⁷ Reflecting the Barbados Programme of Action (United Nations, 1994).

Box 9: Key Issues for Increased Pacific Access to the Global Environment Facility

- The national capacity to develop and execute projects must be in place;
- Co-financing from the Asian Development Bank, the World Bank, and/or others will become increasingly important;
- Adoption of programmatic and long-term financing strategies will be necessary to ensure coordination and secure local ownership and sustainability of project impacts; and
- Use of a regional approach to catalyze/facilitate and backstop projects is preferred.

Source: SPREP 1995

Though informal in nature, the Strategy has served its purpose by establishing loosely agreed priorities for the region in the GEF focal areas. In addition to the pilot SPBCP, the strategy calls for regional projects on climate change and international waters, and an emphasis on biodiversity conservation at the national level. The SPBCP and Project PICCAP have been completed (Box 11), and the International Waters Strategic Action Plan is underway. NBSAPs, as required under the CBD, are being prepared in 13 countries, with five already completed: Cook Islands, Marshall Islands, Niue, Samoa, and Tonga. Discussion is continuing in the region about repeating the 1995 GEF strategic planning exercise to take stock of progress, update thinking, and include the new focal areas.

One element of the GEF strategy that has not progressed well is access to the Small Grants Program (SGP) for Pacific countries. A request to the GEF for such a program has been advanced through Pacific NGOs in collaboration with UNDP, and planning for a Pacific SGP is underway with funding eligibility expected to be in place by 2004.

An overview of GEF assistance to the region over the past decade is shown in Table 34. More than \$60 million has been accessed from the GEF by Pacific countries, mostly through regional organizations, to support implementation of global environment agreements. A large part of these resources (\$27 million)

Box 10: Pacific Islands Strategy for the Global Environment Facility (1995)

The Pacific Islands Strategy for the Global Environment Facility (GEF), adopted by the region in 1995 following a series of multi-stakeholder consultations, committed governments to a number of principles and outlined some key priorities for accessing GEF resources. The principles included (i) involvement of local communities and organizations and responsiveness to cultural requirements and characteristics; (ii) wide participatory and consultative processes; (iii) time frames to allow for adequate participation and consultation; (iv) sustainability of benefits for, and capacity building of, Pacific island people; (v) integration of environmental management and conservation activities with other priorities; and (vi) activities based on a sound scientific framework.

The Strategy recommended to the GEF Council that flexibility within the GEF be sufficient to recognize that the Pacific island states have special conditions and needs in line with the Barbados Programme of Action for the Sustainable Development of Small Island Developing States; that the oceanic nature of the Pacific region is globally unique and must be taken into account; that an urgent need exists for targeted research; and that capacity building and awareness raising are essential in the Pacific region and of particular importance to “enabling activities.” The regional representatives also expressed interest in participating in the Small Grants Program.

The priorities underlined in the Strategy included the following:

Biodiversity

- (i) *marine and terrestrial conservation* including capacity building for targeted conservation, the establishment and management of marine and terrestrial conservation areas linked to sustainable utilization of resources, species conservation, and related information and technology transfer;
- (ii) *appropriate funding mechanisms* for compensation and sustaining programs for the protection and sustainable use of highly significant and threatened components of biological diversity in the Pacific region.

Source: SPREP 1995.

International Waters

- (iii) *integrated management and conservation of living and nonliving marine resources*, including enhanced coordination and cooperation among stakeholders, enhanced observer programs, improved communications, and the development of a comprehensive policy and legal framework;
- (iv) *pollution prevention and waste minimization* including strengthening local, national, and regional institutions, links with integrated coastal management and water development, and the demonstration of innovative approaches to pollution prevention and waste management in the region;
- (v) *training/capacity building* for the management of coastal and freshwater resources, including the development of appropriate curricula and delivery of training, in particular by extension;
- (vi) *coastal stabilization* to include effective coastal protection and adaptation methods that address vulnerability to climate change and degradation due to inappropriate management practices;

Climate Change

- (vii) *climate change enabling activities* including substantial country participation to meet national communication obligations under the United Nations Framework Convention on Climate Change, enhanced capacity and institution building at national and regional levels, and exchange of data and information to improve cooperation among stakeholders; and
- (viii) *energy efficiency/conservation and renewable energy activities* at the local, national, and regional level to help introduce and catalyze the sustainable use of renewable energy resources, and to assist in institutional strengthening, technology transfer, and commercialization of these options.

While the principles remain valid, these priorities will need to be revisited given the expansion of GEF operational programs and the assistance received by the region in the last 7 years.

Box 11: South Pacific Biodiversity Conservation Programme

From a detailed evaluation of the decade-long Global Environment Facility (GEF)-funded South Pacific Biodiversity Conservation Programme (SPBCP), many lessons have been learned. The most significant contributions of the SPBCP have been to

- help governments engage communities and resource users in conservation;
- provide seed finance, training, and technical assistance to demonstrate practical methods of community-based conservation; and
- build the capacity of conservation area support officers (CASOs) as a critical resource for community-based conservation in the Pacific.

A number of problems were identified:

- Numerous culture and resource tenure variations and the distances between countries and communities made regional delivery difficult;
- Regional overheads for implementation are high;
- When CASOs move on, they leave a capacity vacuum behind in conservation areas and lead agencies; and
- The reporting and planning requirements called for an administratively cumbersome framework.

At the end of the day, community-based conservation is seen as a highly valuable means to achieve both community development/poverty reduction and conservation objectives. However, the delivery of activities from a regional base is fraught with problems. In order to achieve lasting benefits, investment in community-based conservation needs to be more flexible, rapidly adaptive, and non-time-bound.

Improving Program Delivery. The evaluation of SPBCP produced a number of recommendations to improve program delivery, including the following:

- Locally driven and home-grown solutions introduced through flexible procedures/processes;
- Longer, lower-cost projects rather than rapid-fire, high-cost programs;
- Resource commitment to core functions to govern natural resources, conserve biodiversity, and protect the environment;
- More time and care in project/program preparation and design;
- “Proper” participation and ownership by stakeholders in the design process;
- Staged implementation through a process of action and learning, with built-in monitoring;
- Capacity building as the most important project objective;
- Knowledge management as an integral part of any design; and
- Partnership and collaboration with other organizations and stakeholders as a performance measure for project/program success.

Source: Hunnam 2002, Baines et al. 2002.

has been expended through three regional programs and a further \$28 million has supported full-sized projects in Papua New Guinea. The balance of \$7 million has been used primarily for nationally executed enabling activities and medium-sized projects in Fiji Islands, FSM, and Samoa. The Capacity Development Initiative and the land degradation window have not been utilized by Pacific countries.

Weaknesses in national capability to plan and execute GEF-funded activities are constraining access to GEF resources—principally for medium-sized and full-sized projects. PDMCs have requested support from the GEF to increase their capacity, primarily so that they can produce better project designs. To address this need, UNDP has provided in-country training in GEF procedures, and a regional country dialogue workshop involving GEF operational focal points from Pacific island countries has also been tried. This constraint is not unique to the Pacific among developing countries, and the recent independent operational performance review of the GEF identified a significant gap between GEF objectives and national priorities and capabilities.

South Pacific Regional Environment Programme

Because it serves as the lead regional organization (CROP member) for environmental activities in the Pacific, it is useful also to review the main activities of SPREP. SPREP’s major donors over the past decade have been Australia, Canada, People’s Republic of China, Commonwealth Secretariat, Denmark, France, GEF/UNDP, UNEP, New Zealand, and US (Figure 13). Table 35 shows SPREP’s

Table 34: Pacific Island Countries' Access to the GEF, 1992–2002

Focal Area	Activity
Climate change	National – Enabling activities (Niue, Palau, Papua New Guinea, Tonga, \$1.376 million) Medium-sized projects (Fiji Islands \$754,000) Regional – Pacific Islands Climate Change Assistance Program* (\$4.3 million) Pacific Islands Renewable Energy Program (\$700,000)
Biodiversity	National – Biodiversity-enabling activities (\$3.7 million) Medium-sized projects (Federated States of Micronesia \$748,000; Samoa \$1 million) Full-sized projects (Papua New Guinea (3) \$25.8 million;) Regional – South Pacific Biodiversity Conservation Program* (Global Environment Facility pilot phase (\$10 million)
International waters	Regional – Preparation of Strategic Action Program for International Waters (\$296,000) Implementation of Strategic Action Program (\$12 million)
Ozone	Nil
POPs	National – Enabling activities (Fiji Islands, Samoa \$757,000)
Land degradation	Nil
Capacity Development Initiative	Nil
Small Grants Program	Papua New Guinea
Total	\$60 million
*completed. POPs = persistent organic pollutants. Source: http://www.gefweb/Projects/projects-Projects/projects-projects.html .	

Table 35: SPREP Annual Expenditure on Project Implementation

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
\$'000	2,294	3,014	2,946	3,507	4,443	5,034	4,632	5,485	5,118	5,736

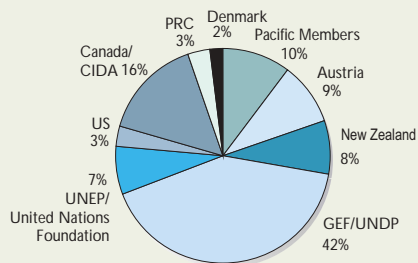
Source: SPREP Annual Reports (1992–2002).

project budgets (1992–2001), and Figure 14 indicates the significance of GEF resources (42%, through UNDP) to SPREP's overall budget.

Although SPREP is the CROP body with lead responsibility for supporting improved environmental management in the region, virtually all other CROP member organizations also carry out environment-

related activities with funding from an equally diverse range of sources. For example, support for natural resource management programs is provided through the SPC, SOPAC, and USP. Though these are not summarized here, they form an important part of the institutional mosaic serving to strengthen environmental and natural resource management in the Pacific region.

Figure 13: Major External Agency Contributions to SPREP for Environmental Programs in the Pacific Region



Source: SPREP 2002.

CIDA = Canadian International Development Agency; GEF = Global Environment Facility; PRC = People's Republic of China; SPREP = South Pacific Regional Environment Programme; UNDP = United Nations Development Programme; UNEP = United Nations Environment Programme; US = United States.

Accomplishments, Constraints, and Lessons Learned

Valuable lessons can be drawn from the external agencies' experience in implementing environmental assistance programs in the Pacific. Merging both ADB's experience and that of other funding agencies and implementers, several patterns emerge that can help to inform and influence future environmental programming. The summary presented below attempts to capture what has worked and what has not, with lessons drawn from successes and failures in equal measure.

Learning from Areas of Progress

Building on National Environmental Management Strategies. The PDMCs got off to a very good start in the early 1990s with preparation of NEMS or similar plans (ADB and SPREP 1992). In many cases, these represented the first attempt at the national level to take stock of natural resources and the relationship between environmental management and economic development. Too often, however, the latter connection was inadequately emphasized. This marginalized the NEMS exercise so that those in economic planning and finance or even the key sector agencies did not consider it relevant. While gathering important initial baseline information and raising the public profile of

environmental concerns, the NEMS in many respects were preaching to the converted. They identified a wide range of environmental and natural resource management concerns, but failed to set priorities based on links to economically- and/or socially-based criteria in a benefit-cost framework. As a result, many of the recommended responses lacked credibility, affordability, and implementability. National sustainable development strategies will suffer the same fate if they are not led by finance or economic planning agencies and do not involve all stakeholders, including critics, in the process.

Utilization of the Council of Regional Organizations in the Pacific.

The rationalization of regional organizations' efforts through the creation of CROP was a promising initiative. Especially high hopes were placed in SPREP, which was given the mandate to work in partnership with Pacific countries, funding agencies, NGOs, and others "to strengthen the capacity of its Pacific members to plan and manage their own national environmental programs, and to enhance regional cooperation to deal more effectively with issues that are transboundary in nature or which require interventions at the global level" (SPC 2002b). Some notable achievements have occurred in regional environmental awareness raising and capacity development, particularly for global issues such as biodiversity conservation and climate change. However, the CROP network has not yet reached its full potential in managing and disseminating information on Pacific resources and best practices utilized at the national and regional levels. In some sense, their view has been outward toward the global stage, rather than directed to national issues and concerns. Cooperation among CROP members and their internal management structures could be improved. Until their work becomes more directly relevant to helping solve national-level concerns, even their regional efforts will suffer.

Pacific Engagement on Global Environmental Issues.

As evidenced by the special attention afforded SIDS at WSSD, Pacific countries and regional organizations have excelled at getting their voices heard—disproportionately to their economic or geopolitical clout—in international forums on global environmental issues. Despite human resource and other capacity constraints, they have gained an impressive degree of access to global financial mechanisms (especially the GEF) made available to address environmental concerns. However, the work of

the regional organizations in promoting such engagement has largely failed to bring the benefits home to the grassroots level. It has not demonstrated the relevance to domestic economic development of adaptation to climate change and variability, water and coastal resource management, or biodiversity conservation. Biodiversity conservation may represent an exception, if the 223 protected areas are any measure of country-level action. Even in this case, enforcement capacity is extremely weak, and stronger community benefits and engagement, public-private partnerships, and sustained international assistance will be needed if the integrity of the protected areas network is to be maintained.

The other major problem raised by the heavy Pacific involvement in fulfilling obligations under the MEAs is the added burden this has placed on already overtaxed national capacity. A recent study of several Pacific countries concluded “the MEA processes proved to be placing substantial demands on the capacity of a broad range of government agencies ... [and] actually competed for limited resources against domestic policy implementation” (Mougeot, Piest, and Dodds 2002). Reporting requirements and attendance at international and regional events account for a large part of the annual budget of environment agencies.

Replicating Local Successes. Local community environmental management initiatives, contemporary applications of traditional environmental practices, public-private partnerships for environmental management, and even small-scale government environmental or resource management programs can be found scattered across the Pacific at the pilot demonstration level. Many of these are highly successful, but few have fostered any meaningful connection to or influence over national or regional environmental policy and program development. Furthermore, they are often not designed with replication in mind, so that their impacts remain highly localized. A more systematic approach needs to be taken, both to the design of new demonstration activities and to gathering the existing experience and transferring it where applicable. ADB-sponsored efforts in the Pacific water sector—in partnership with SOPAC and others—provide a good starting point. Some 15 case studies on local initiatives and other documentation of best practices have been prepared and are being disseminated through conferences and other activities (ADB and SOPAC 2002).

Lessons from Constraints Encountered

Lagging Legal Frameworks. Despite some progress in establishing a national agenda for environmental management capacity and norms, most PDMCs still lack legal frameworks covering the major aspects of environmental protection and natural resource management at the local level. In many countries the problems encountered in establishing a national legal framework appear to stem from conflicts between Pacific traditions of local management authority and attempts to impose top-down management structures. Many of the issues could probably be resolved through a more concerted consultation effort with all stakeholders, backed by a willingness to compromise on the part of all parties involved. Executive agencies also need to work more closely with the legislative and judicial arms of government in this process.

Environmental Mainstreaming. The absence of a legal framework also means that there has been very little real progress in mainstreaming environmental considerations into the way policies, plans, and programs are developed for key sectors, such as transportation, energy, industry, and tourism. Most resources and effort have been absorbed in trying to build apex environmental bodies at the national level; only recently has attention turned to integrating environmental thinking into the processes and operations of finance or economic planning authorities. The current effort spearheaded by SPREP and the Pacific Forum Secretariat is commendable, and it is hoped that the 2003 Forum Economic Ministers’ Meeting in Majuro will mark a turning point in regional understanding about the direct links between sound environmental management and the long-term economic development prospects of PDMCs.

Regional versus National or Local Interventions. Much closer attention also needs to be given to the question of the appropriate level at which interventions are organized and implemented in the environment sphere. The tendency, among external funding agencies especially, has been to favor regional-level programs for ease of organization, economies of scale, and cost savings. To a certain extent, this has been encouraged by the regional organizations that have served as implementing bodies for these programs. But it is almost axiomatic that environmental problems begin locally and are ultimately solved locally, even those with regional and global

dimensions. This argues strongly for organizing environmental interventions at the subnational or even local level (King 2001a). Note, however, the previous concerns over scalability and replicability of local interventions; special care is needed when interventions are taken at the local level to ensure that positive results can be more widely disseminated and/or replicated. Experience in the Pacific indicates that—except when addressing transboundary problems—regional approaches should be taken only when (i) a clear role exists for one (or preferably more) of the established regional organizations, (ii) obvious economies of scale can be achieved in administering and/or delivering the program, and/or (iii) impacts are likely to be more sustainable or replicable because of the program's regional reach.

Consultation, Participation, and Awareness. Civil society should be much more fully engaged in the development of environmental policies, plans, and programs. This should go hand in hand with other public outreach and awareness-raising efforts to expand the base of those who are well-informed on the environmental subjects that affect them. Building partnerships among government, community groups, NGOs, and the private sector is an efficient and sustainable approach to making use of scarce resources, sharing burdens, and developing local expertise and ownership. In their statement to the WSSD (PIFS 2002b), the PDMCs, committed themselves to develop environmental partnerships, a good step in the direction of a more open and collaborative approach to solving the most important environmental problems facing PDMCs.



CHAPTER 5

Pacific Region Environmental Strategy, 2005–2009

Vision for the Region

Overview

This chapter formulates a new strategy for ADB's environmental assistance to PDMCs as part of a broader strategic planning exercise covering ADB's overall assistance to the region for the period 2005–2009. Before describing the main directions for ADB's environmental assistance during this time frame, it is useful to review the principal areas of concern in the region and to map out a future vision for improved environmental management by the end of this planning period.

For the eight environmental management problem areas identified in Chapter II, a picture can be painted of improved conditions that seems realistically achievable by 2009. The eight areas are divided into three groups: (i) those that can be dealt with primarily at the local or country levels; (ii) those that require action at both the country/local and regional levels; and (iii) those requiring action at the local, country, regional, and global levels.

Issues at the Local or Country Level

Freshwater Resource Management. The results of the 2002 Pacific Regional Consultation held in Sigatoka, Fiji Islands, on the region's water management challenges show that the Pacific island countries' precious freshwater resources are under increasing threat. While good statistics on these trends are sorely lacking, the widespread consensus is that immediate attention is needed to solve water management problems, placing stress on the economic and social well-being of Pacific peoples. The goal will be to achieve measurable increases in the affordability and availability of clean water supplies and sanitation services for both rural and urban populations as well as overall improvements in the health of aquatic ecosystems. The MDGs also include targets for the provision of water supply and sanitation, and these will be used as a guide.

Land and Forest Management. Land degradation due to erosion, deforestation, and the poorly planned expansion of human settlements is a widening problem in PDMCs. Most have produced national action programs to meet their commitments under the United Nations Convention to Combat Drought and Desertification (UNCCDD) to address land degradation issues. These plans should form the core

of responses to land degradation problems at the country level. Forest ecosystems are also under pressure from logging, fuelwood extraction, conversion for agriculture, and encroachment of invasive species. Forest loss is having a negative impact on the Pacific's terrestrial biodiversity—and indirectly, through increased sedimentation, on the diversity of coastal ecosystems. The use of remote sensing data and geographic information system methods could greatly improve understanding of these trends. The UNCCDD national action plans provide a future vision for most PDMCs that can be used to determine what may be expected regarding improved land management by 2009. While no similar targets have been set for improving forest management in the region, the vision for 2009 should be to have a stable or growing net forest area in each PDMC.

Urbanization and Waste Management. Rapid population growth and expanding economies in most PDMCs have combined to produce a Pacific brand of uncontrolled urban expansion and increasing waste streams from municipal, tourism, and light industrial sources. Governments are under new pressures to improve land-use planning, and they are struggling to provide adequate environmental services such as wastewater collection and treatment as well as solid waste management. The problems of urbanization and waste management are considered to be manageable, especially if country-level action is taken quickly to better analyze options and move forward with both institutional reforms and necessary infrastructure investments. The vision for 2009 is for each PDMC to have arrested the trend of unplanned urban expansion, and to have achieved a state of no net increase in untreated solid or liquid wastes disposed of. It is to be hoped that these gains will also be accompanied by aesthetic improvements through reduced litter, less pollution of waterways, and generally cleaner urban environments.

Energy-Related Environmental Concerns. The provision of convenient and affordable energy across Pacific archipelagos—for households, businesses, public services, and transportation—is one of the greatest challenges for the economic development and improved welfare of PDMCs. Energy issues are intertwined with those of environmental management primarily through the pollution by-products associated with the use of fossil fuels—with both local and global impacts. The vision for 2009 entails significant improvements on both the demand and supply sides of the energy equation, and an increase (from the current level of only 30%) in the

region's population that has access to electricity. The supply side vision also includes provision of an increased percentage of energy through market-oriented nonfossil fuel sources. On the demand side, improvements in energy efficiency should be recorded.

Issues Crossing Local/Country and Regional Levels

Management of Coastal and Marine Environments. The specific characteristics of each PDMC are defined in many key respects by the interactions between their terrestrial and marine environments. This interface occurs along their coastlines. The health and productivity of PDMC coastal and marine ecosystems are under threat from both land-based and marine pollution, as well as from destructive and unsustainable exploitation patterns, particularly fisheries. Though many of these challenges must be met at the country level, some—such as those relating to the management of pelagic fisheries—will require regional cooperation. The vision for coastal and marine management in 2009 is a stabilization of the health of coastal ecosystems and an assurance—based on both better analysis and improved practices—that both nearshore and migratory fisheries are being harvested sustainably.

Environmental Governance. ADB is committed to helping PDMCs improve the quality of their governance through better public administration and financial management, improved legal and regulatory frameworks, strengthened judicial systems, and a widening role for other elements of civil society in economic, social, and cultural affairs (ADB 2003a). Improved environmental policies and institutions are urgently needed as part of this overall effort, and much better collection and analysis of environmental information must support improved decision-making systems. To date, the appropriate roles and capabilities of central government environmental authorities have been well-established only in a few PDMCs. These government agencies should be backed by realistic laws and regulations that have the public's support. Attention must also be given to mainstreaming environmental thinking into both macroeconomic and sector planning. Pacific traditions of sound natural resource management should be built upon wherever feasible, and a generally stronger role for civil society should be encouraged, both for monitoring environmental quality and actively engaging in environmental management efforts.

Pacific environmental governance challenges also extend to the regional level. Economies of scale are there to be achieved—whether through regional cooperation in tackling transboundary issues such as pelagic fisheries management, or by efficiently addressing environmental problems common to most PDMCs. To this end, the CROP network deserves further strengthening, especially so as to ensure better monitoring of Pacific environmental conditions and trends. The vision for 2009 at both the national and regional levels is to have well-functioning national environment agencies backed by sound legislation, and supported by increased attention to environmental considerations in macroeconomic and sector planning and programming. In the future, regional organizations should play a more effective role in helping their Pacific members cope with key environmental management problems at both the country and regional levels.

Issues Crossing Country, Regional, and Global Levels

Biological Diversity Conservation. The natural wealth of the PDMCs' unique environment underpins both their formal and subsistence economies. In addition, the biodiversity of the region is recognized to be of global significance. Yet the threats to its conservation are among the highest anywhere in the world. It is vital to the well-being of the Pacific people that their biological resources—supporting agriculture, fisheries, forestry, and tourism—be sustainably managed. The vision for 2009 is a marked improvement in the management of ecosystems with high biodiversity. This might be indicated by noticeable improvements in the management of the 232 protected areas already designated in the Pacific, as well as a reduction in the number of species that are internationally recognized as threatened.

Adaptation to Climate Change and Variability. No environmental challenge facing PDMCs is more “global” and potentially more severe in nature than the adverse consequences of climate change. It is generally accepted that climatic events will increase in incidence and severity, especially droughts and cyclones, and that sea levels will gradually rise. The PDMCs need to begin prudent and serious measures to adapt to these threats. The vision for 2009 is that all PDMCs will have fully incorporated the need for adaptive planning and actions into their national development policies—at the very least through the adoption of a “no regrets” adaptation policy. If PDMCs

are to have credibility in the international community on climate change matters, they will also need to meet their deadlines (2008–2010) under the Kyoto Protocol to the UNFCCC regarding greenhouse gas (GHG) emissions.

ADB's Role in Improving Pacific Environmental Management

The overall objective of ADB is poverty reduction. Activities to promote economic growth, develop human resources, improve the status of women, and protect the environment are meant to serve the poverty reduction agenda. Among ADB's other key development objectives are law and policy reform and improved regional cooperation, which also are expected to contribute significantly to achieving its main goal of fighting poverty.

Strong links exist between the health of the natural environment in the Pacific and the economic well-being of the poor. ADB's efforts to help improve environmental management, therefore, will fully support its overall objective of reducing the incidence of poverty within PDMCs.

Around the Asia and Pacific region, ADB also is playing an increasingly important role in supporting regional and national policy dialogue, institutional strengthening, and reform. This is taking ADB well beyond its traditional strengths as a multilateral lending institution into an active policy and program engagement with international organizations, governments, and a wide range of stakeholders. The effort to improve environmental management offers important opportunities for ADB to leverage its resources, build national and regional capacity, and achieve greater local ownership of initiatives through the systematic development of strategic partnerships with appropriate national and regional organizations, as well as NGOs.

Intervention Strategy

The analysis presented shows clearly the importance of dealing with environmental and natural resource management techniques in the Pacific region, because

overexploitation of resources and environmental degradation directly affect the economic and social well-being of PDMC populations. ADB has been an active partner in past efforts to help improve policies, institutions, and practices to better manage and protect the region's natural systems, and the new PRES will build upon this work and further enhance ADB opportunities to contribute positively.

The PRES will serve as an important touchstone and source of guidance for ADB in its efforts to help improve the basis for sustainable development in the region. It is organized into three parts. The first is a framework for assistance in the region and the organization of ADB itself that presents the rationale for intervening at various levels—local, subnational, national/sector and regional—and briefly discusses opportunities to form strategic partnerships for building local capacity and ownership and leveraging ADB's resources. The second section summarizes the main activities ADB anticipates undertaking during 2005–2009, organized according to the intervention point. The final section deals with performance measurement and the key assumptions that underpin the PRES.

Framework for ADB Environmental Assistance in the Region

At the project level, ADB will continue to implement its environmental safeguard policies fully, to ensure that potentially adverse impacts of projects and programs are reviewed, and when necessary, prevention, abatement, and mitigation measures are incorporated into project design. ADB also circulates for stakeholder review environmental impact assessments (EIAs) and/or summary EIAs—encouraging all parties concerned to participate fully in implementing environmental management plans according to EIA recommendations. Mitigation measures will be built into project design and the results carefully monitored during implementation.

At the grassroots level, ADB will work through community-based organizations and NGOs to design and implement local-scale interventions with potential replicability. Community-based natural resource management—especially acknowledging and building upon traditional environmental management customs, knowledge and practices—will be a key strategic approach for ADB operations at this level.

ADB believes that the subnational level is the most crucial point of intervention in the Pacific region—watersheds, islands, urban areas and their hinterlands, provinces, or states are the planning units of choice. At this level, strong community ownership is in evidence, ecosystems can be understood, the scale is appropriate to funding agency and government resource constraints and successful interventions, and the likelihood of successful replication is high. Where possible, ADB will prioritize the geographic scale of its sector interventions in agriculture, forestry, energy supply, etc. to focus on subnational ecosystems, rather than attempting to cover entire countries with a single project.

ADB is continuing to improve the process of “mainstreaming” environmental considerations into its country operational strategy studies, sector policies, TA, and loans. Consistent with its new Environment Policy, it is making more intensive efforts to take stock of lessons learned from environment-related assistance in each PDMC, and to consider all opportunities to incorporate appropriate actions—at the policy, institution, project and program levels—into ADB’s country operations. This exercise has already begun for country programming in Cook Islands, Fiji Islands, PNG, and Samoa. It will be extended to all PDMCs over the next 2 years.

A balance must be struck between efforts at the regional and country levels. For some subject areas, it will be necessary to complement country-level interventions with activities implemented through regional TAs (RETAs) covering some or all PDMCs. However, these situations will be infrequent. ADB’s operations are fundamentally conducted at the country level through its direct assistance to PDMCs. Regional work is undertaken, when needed, to support and complement these country-level efforts (both lending and TA assistance).

ADB cannot address every type of environmental management problem currently occurring in PDMCs. Strategic focus must be applied to choose those areas of intervention that best draw upon ADB’s strengths, achieve complementarity with other ADB assistance, and take advantage of opportunities both to leverage resources and to form strong strategic partnerships. In general, stand-alone environmental assistance will not be pursued unless there is strong government commitment to mainstream environment issues into economic development planning and management. Though specific

interventions seldom fall neatly within geographic or institutional bounds, the proposed areas of strategic focus—to be organized at the local, subnational, national, and regional levels—are described below. The main problem to be addressed is briefly described and an associated intervention is provided. Expected accomplishments are also summarized, and where possible expressed in quantitative terms and linked to MDG targets and/or WSSD.

Areas for Local/Project-Level Assistance

Improved Provision of Environmental Services. The majority of ADB’s environment-related assistance to its PDMCs is expected to continue to be associated with investment in environmental infrastructure. This includes projects for improved water supply, sanitation, and solid waste management. Such investments can be more efficiently designed and utilized if they are placed in a broader context of environmental management at the island-wide or water catchment level, especially for water management infrastructure. ADB is well placed to provide such analysis, as it is a leading source of investment financing for environmental infrastructure in the Pacific.

ADB will also support broader urban and land-use planning activities, stronger efforts to integrate water quality and quantity management, and back-to-basics outreach programs—on everything from water conservation to litter prevention—to engage key environmental service consumers. A combination of TAs and the incorporation of such efforts into project lending for water supply, sanitation, and solid waste management will enhance the effectiveness of all such environmental infrastructure investments.

Assessing progress in this area will require improved environmental information baselines and monitoring, especially to record the number of people with access to environmental services. With specific regard to improved provision of water and sanitation services, measured progress will help Pacific governments meet several global targets agreed to at the WSSD, especially the commitment to halve the proportion of people without sustainable access to safe drinking water. Such actions would also directly relate to the achievement by 2015, the target year, of MDG No. 10 for the expanded provision of safe drinking water (Box 12). Likewise, improvements in sanitation service provision will help governments meet global targets agreed to at the WSSD, including

(i) halving the proportion of the population without access to adequate sanitation services, and (ii) achieving a significant improvement in the lives of slum dwellers by 2015. This latter target also directly relates to a target set under the MDGs, with 1990 as the baseline year and 2015 as the year targeted for a global goal of 100 million slum dwellers affected.

Integrated Water Resource Management for Atolls. The special challenges of water management in coral atolls—from expanding populations and contamination of freshwater lenses—have recently been emphasized. The threat of rising sea levels further complicates this situation. Given the number of PDMCs with islands facing these problems, it will certainly affect ADB operations in the Pacific, and the subject warrants further specific attention. Based on the recently concluded “Sigatoka Agreement” for improved and more integrated water resource management in the region (ADB and SOPAC 2002), ADB will use its position as a leading partner in the water resource sector to promote improved local-level and country understanding of and response to problems of atoll water management.

ADB will develop a comprehensive strategy and action plan for sustainable water management of atolls that will guide its own operations and serve as a reference in the Pacific. Beginning in Kiribati, TA support will be used to establish replicable best practice models at the local level for wide dissemination and information sharing in the region. This may also lead to investments warranting lending assistance.

As such efforts move forward, they will necessarily generate information on the dimensions of freshwater resources in these atolls and their contamination. This will be essential to the establishment of baselines for monitoring systems and the assessment of progress in dealing with the challenges of freshwater management in coral atolls, with specific indicators to be developed.

Community-Based Ecotourism and Biodiversity Conservation. Numerous small areas or island communities throughout the Pacific represent ecosystem types and/or provide sanctuary for rare or endangered species. These could be managed as protected areas for biodiversity conservation and at the same time serve as ecotourism sites. ADB could serve as a catalyst for linking the conservation of unique and valuable Pacific biodiversity to appropriate tourism development and the

complementary provision of much needed roads, ports, and other infrastructure—especially for remote islands.

Drawing upon communities living within or adjacent to these conservation areas, ADB will support the development of management schemes to blend conservation objectives and environment-friendly, sustainable, income-generating activities such as nature walks, bird watching, whale watching, camping, and ecotours. Respect for and utilization of traditional environmental management customs and practices will be an integral part of this strategy. The development of such schemes will be accomplished through a combination of TAs and loans with financing from within ADB as well as from external sources, such as the GEF and possibly private investors. Initial attention will focus on opportunities in the Fiji Islands, though this initiative will be used to derive models applicable elsewhere in the Pacific.

A fundamental principle of performance measurement in such schemes should be to engage the target communities in monitoring the health of natural systems. Visitors may also be asked to contribute to such efforts. Careful attention to the establishment of baselines for use in monitoring changes in environmental as well as social and cultural conditions will require sensitivity in project design.

Areas for Assistance at the Subnational Level

Integrated Water Resource Management. High islands and coral atolls alike are facing increasing water management challenges. On the high islands, little systematic thought and effort has been given to watershed management—let alone a fully integrated approach to water management that considers and balances the interests of all users, including the needs of aquatic and coastal ecosystems. As noted, coral atolls are facing heavy threats from overuse of limited freshwater resources by expanding populations, and vulnerability to sea-level rise is a further complication. As a principal source of water sector financing in the Pacific, ADB is well placed to promote a more integrated approach to water management within PDMCs.

ADB will provide well-focused TA activities to support integrated water resource management wherever the problems are most acute, and especially when these

complement ADB's infrastructure investments. This is expected to include watershed management components of upland agricultural development activities, as well as lowland surface water and groundwater management. When warranted, ADB's support will be extended—through grant-financed TAs and elements of loan-financed investments—to the development of broad-based national water management policies and institutional structures. These will serve as mechanisms for coordination and facilitation of investments in this important sector, cover both surface and groundwater management, and integrate water quantity and quality concerns. Special attention will be given to finding a proper balance between the roles of government entities, the private sector, and water users in the management of water systems. The special social, cultural, and religious sensitivities regarding water rights and allocation mechanisms will also be taken fully into account.

Indicators for the measurement of progress in water resource management have been discussed above. The Sigatoka Agreement offers some concrete suggestions for the standardized monitoring of water resource systems under Pacific conditions, as well as a preliminary framework for regional cooperation. If warranted, limited support for regional dissemination of promising water management approaches may be provided through a regional TA mechanism.

Sustainable Tourism and Biodiversity Conservation.

The tourism industry has much further potential for development in most PDMCs as an environmentally benign and sustainable source of jobs and income. This is true for both the main islands and outer islands in archipelagic countries. However, concern is increasing that current patterns of tourism expansion may undermine the beauty and functions of the unique landscapes and cultural manifestations that are the very reasons visitors are drawn to PDMCs. Although tourism development must be driven by the private sector, ADB can play an important role in helping to establish the enabling conditions for private investment and for sustaining the environmental and cultural foundations of the industry.

ADB will support the market-based expansion of ecotourism in selected PDMCs through a combination of TA and loan-funded investments—especially when this can attract public sector co-financing derived from global funds for biodiversity conservation. This will be closely

coordinated with efforts to develop loan-funded investments to provide needed infrastructure in outer island settings. Related actions planned at the local level already have been described. If warranted, consideration will also be given to expanding attention to this topic at the regional level, through RETA support for the development of appropriate ecotourism models and their dissemination.

Success can be measured by increases in conservation area covered by such schemes and by associated levels of investment. With improvements in information collection on the characteristics and health of Pacific ecosystems, some comparative analysis of the efficacy of such conservation approaches versus other strategies for protected areas management may also be possible.

Renewable and Efficient Energy Production and Use.

As shown by the impending expansion of hydropower development in several PDMCs, attention is turning to opportunities for broadening the production of energy from renewable sources. As regional understanding and appreciation of such investments—including wind, biomass, and solar power as well as hydropower—increases, ADB's TA support and lending at the subnational level can provide key technical and financial inputs to help realize this potential. Energy saving, through a wide range of conservation efforts and demand-side management activities, also deserves special attention. ADB is well placed to serve as a catalyst for increased attention to and investment in such opportunities.

ADB will provide TA resources and loan-funded investments to support the wider use of renewable energy sources, especially on outer islands and in rural areas, wherever these can be shown to be commercially viable. It will also provide TA to help create the enabling market conditions for the expanded use of alternative and renewable energy production and use, and will seek opportunities to improve the efficiency of energy use based on both improved public awareness and market incentives. This TA support will expand the marketing of carbon credits for renewable energy sources as a form of co-financing.

Progress in this area can be measured by the increased number of megawatts provided by renewable and alternative energy sources, and/or by the energy saved through conservation efforts or other efficiency

improvements. These measurements can be converted to dollar terms as well, based on market energy prices. Measures of the number of people benefiting from alternative or renewable energy sources, dollars spent on such investments, and/or GHG emissions averted also may be useful.

Management of Marine and Coastal Resources. Coral reefs, mangrove forests, sea grass beds, beaches, and offshore marine ecosystems must be protected to safeguard the well-being of communities that depend on them to provide their livelihoods and to sustain the very existence of their island homes. These ecosystems form the ecological foundation of PDMC economies and support jobs, health, nutrition, coastal protection, and tourism. Reef systems, in particular, are progressively more at risk, especially from improper waste disposal by increasingly dense coastal populations, from global threats of climate change and variability, and from invasive species. ADB can encourage improved awareness and responses to these threats through both its investments and its policy dialogue.

ADB's assistance to protect these vital natural resources will include direct loan-funded interventions to solve specific coastal or marine resource management problems, often in conjunction with infrastructure investments, and TA activities to support improved awareness, community-based management approaches, and better environmental monitoring. These activities will complement and be coordinated with those relating to water management, regional fisheries, and adaptation to climate change and variability.

Reliable and consistent information concerning the current conditions of coastal and marine resources—let alone trends in their productivity and diversity—is sorely lacking. The systematic collection of such information must be built into any interventions in this field. In time, this can be used to establish baselines for performance measurement and improved decision making regarding the efficacy of alternative management approaches.

Areas for Strategic Focus at the National and Sector Levels

Environmental Governance. Important gaps remain in the policy and legal frameworks for environmental management in most PDMCs that need to be filled if there is to be a firm foundation for further progress. The two

most relevant lessons from experience indicate that (i) overly comprehensive and complex legal measures are less likely to be accepted and implemented than simpler and better-focused mechanisms; and (ii) it is essential that all important stakeholders be engaged in the consultative process leading to new regulatory or policy measures. The wider application of traditional environmental management practices in development programs and projects should also be encouraged and incorporated into national legislation wherever possible. Lessons about the difficulties of passing and implementing national legislation have come from ADB's early support for such efforts. Because of ADB's relationship with PDMC governments and engagement in key natural resource and environmental management sectors, it remains in a strong position to promote the development of sound environmental governance structures.

ADB will provide policy dialogue and TA support to country-level efforts aimed at drafting and passing environmental protection and management legislation and regulations. This will particularly include the development of the capacity to meet the basic EIA requirements to screen potentially damaging development projects. Strong EIA capabilities are necessary to complement ADB's own safeguard policies and to ensure that ADB projects do no harm to local environments. TA assistance will be accompanied by complementary support to policy dialogue in the consultative processes leading to these policy and regulatory reforms.

Performance measurement in the area of environmental governance is problematic and the subject of considerable international debate at the moment. Close attention should be paid to the outcomes of international discussions on the most appropriate indicators in this field, with associated measures adapted for use in Pacific.

Environmental Mainstreaming at the Sector Level. Stand-alone environmental assistance will be only weakly sustainable without strong PDMC commitment to weaving environmental considerations into the very fabric of sector development planning and management. Public works projects to provide sewage treatment and water supply are something of a special case, but concerted efforts are needed to build environmental capacity and understanding into planning and investment in other key sectors such as transport, power, communications, mining, and agriculture. Whether relating to water management, tourism expansion, energy

development, coastal resource management, or other sector (or subnational) interventions, it is essential that the capacity for understanding and acting upon environmental concerns be established and maintained. ADB's ongoing policy dialogue with PDMCs in many of these sectors provides an important platform from which to further this agenda.

ADB will thus assist with this capacity building both as part of its lending, policy, and programming dialogue and, where warranted, through directly targeted TA activities. ADB is committed to working with all PDMCs in this effort, especially to help strengthen the capacity of key line ministries so they can appreciate and respond appropriately to the environmental dimensions of their sector in the development process.

As noted, quantitative assessment of progress in the area of governance is particularly difficult. The MDGs include the desire to "integrate principles of sustainable development into country policies and programs and to reverse loss of environmental resources" (Goal 7, Target 9), but work continues internationally on a consensus set of specific performance measures.

Mainstreaming Environmental Considerations into Development Planning. Beyond support for the establishment of broad-based legal and regulatory frameworks for natural resources and environmental management and sector mainstreaming, a strong need remains for better incorporation of environmental considerations into national development policies and programs. Public investment programs should consider their environmental dimensions from the earliest stage, and the economic costs associated with environmental mismanagement should be part of national debate on development priorities and approaches. ADB is actively engaged with national development planners and policymakers and can use this position to encourage the mainstreaming of the environment into all aspects of social and economic development—even as it does the same for its own operations.

Through its ongoing policy dialogue with PDMC governments, ADB will work with national economic planning authorities and other relevant bodies to help build environmental considerations into the mainstream of their routine processes. Much of this will come through ADB's own country programming. In this context, ADB will conduct analyses of environmental issues affecting its operations at the country level, as

required by its Environment Policy, and will use this information to shape the direction of its country programming and recommendations for PDMCs about associated policy and capacity building needs. This process has already begun in several PDMCs. Building on the PRES analysis, more in-depth studies will be made on key relationships between environmental management and development at the country level affecting ADB operations in all PDMCs.

Once again, performance measurement in this area is problematic and will require special attention. Since this is tied, in part, to the achievement of MDG Goal 7 (Target 9), an internationally recognized set of indicators should emerge soon, and these should be adopted for tracking progress.

Areas for Complementary Regional Assistance

Importance of Regional Cooperation. Promoting regional cooperation is a central theme of ADB's work across the Asia and Pacific region. Regional economic integration as well as environmental cooperation on common problems can benefit all PDMCs.³⁸ ADB can play an important leadership role by encouraging continued and more effective regional cooperation on topics related to environmental management including (i) improvements in the gathering and management of information on environmental trends and conditions so that progress can be better assessed; (ii) strengthening the productive and appropriate roles of CROP organizations in environmental management; and (iii) helping PDMCs learn from international experience with environmental management of island states, including follow-up to the Barbados Programme of Action. ADB's PRES will be coordinated with the SOPAC Sustainable Development Strategy and the impending update of the SPREP Workplan (2003–2006), as well as SPC's 2003–2006 Strategic Plan, among others, to help ensure common directions and good collaboration. The development of strategic partnerships between ADB and other organizations active in this area—including NGOs—will be encouraged to leverage resources and heighten Pacific ownership of environmental management initiatives. For example, ADB has proposed a multi-development partner

³⁸ An overview of ADB's strategy and planned regional assistance program is contained in *Regional Cooperation Strategy and Program for the Pacific: 2004–2006* (ADB 2003c). While regional performance indicators are not specifically discussed here, they are addressed in the regional cooperation strategy.

regional initiative on the clean-up of scrap metal throughout the Pacific.

Environmental Information Management. The lack of reliable data on environmental conditions and trends poses a critical constraint to good planning and programming at the sector, national, and regional levels, and thus constitutes an essential underpinning of good environmental governance. It is vital that decision makers have a sound scientific and economic basis for setting policy and program priorities. A reliable, consistent, and accessible information baseline that is systematically updated is crucial to any effort to measure environmental progress. Specific attention must be given to establishing a sustainably managed database on key environment and natural resource indicators, together with an appropriate institutional home for this information. This will lead to greatly improved capacity to evaluate resource management and environmental quality trends. Since ADB operates throughout the Pacific and is actively engaged with PDMC governments in the collection of social and economic data, it is positioned to encourage the improved monitoring of environmental conditions and trends and for wider sharing of such information.

ADB will use TA resources, its policy dialogue with PDMCs, and cooperation with CROP members and others in the international community to help improve the compilation and assessment of data on Pacific environments. Such efforts will include but not be limited to the development of baseline information from remote sensing data utilizing geographic information systems and the organization of information covering land use, forest cover, rangelands, wetlands, coastal ecosystems, and other data sets. All such efforts will encourage a process of environmental information management that is transparent, consistent, and commonly accessible (preferably Web-based) to support both project-level environmental assessments and broader policy and program planning at the subnational, national, and regional levels.

Environmental Legal and Regulatory Framework. The deficiencies of environmental policy and legal frameworks at the country level have already been noted. This is a problem that is common to most PDMCs and would benefit from a regional response. ADB has previously been engaged with most PDMC governments on this subject through its early support for NEMS action plans. It should again be able to encourage a new—and

better targeted—wave of environmental policy and legislative reforms.

ADB will provide regional TA resources to complement those at the national level to develop and regionally disseminate legal and regulatory models adaptable to local conditions. This will necessarily involve assistance for participatory and consultative processes to ensure that all important stakeholders are engaged in the development of environmental policies, legislation, and regulations.

Sustainable Management of Tuna Fisheries. The harvest of highly migratory fish species is of tremendous economic importance to most PDMCs, and this is largely accomplished through the licensing of foreign fishing vessels to gain access to their EEZs. The adoption of the Pacific Tuna Convention in 2000 was explicitly formulated to safeguard the sustainability of the highly migratory species, and provides an opportunity for initiating programs to better understand this fishery and contribute interventions to ensure that its exploitation remains within these bounds. ADB has been actively engaged in this field, and it can use its relationships with PDMCs to encourage further progress.

ADB will use TA resources to support the review of these regional resource and economic management arrangements and efforts to develop and effectively disseminate information on appropriate sustainable management regimes for Pacific tuna fisheries. It is expected that this will directly contribute to increased benefits for participating PDMCs by creating enhanced opportunities to extract fair resource rents based on allocations, and also by carrying out area-wide management policies.

Energy Efficiency and Renewable Sources Development. Project-level interventions planned to assist rural communities in PDMCs that lack economic opportunity and modern conveniences because they do not have access to electricity or other forms of energy have already been described. The commercial development of renewable energy sources, coupled with a high efficiency of energy use, offers the potential to fill this gap without adverse environmental consequences. Since this is a common problem across the PDMCs, and especially in outer island and rural settings, it also warrants regional attention. ADB's strong working relationships with those in the Pacific energy sector, as well as its links to

international sources of expertise and financing—particularly for activities that reduce GHG emissions—puts it in a strong position to take a leadership role in this field.

ADB's regional TA resources will address the constraints to expanded commercial provision of energy from renewable sources to determine whether it can play a wider role in creating markets for these energy services and associated institutions. Opportunities for collaborating with SPREP's GEF-funded Pacific Islands Renewable Energy Project and co-financing based on global benefits from GHG reductions will be examined along with ADB's potential assistance in brokering such financing.

Adaptation to Climate Change and Variability. Although investments needed to adapt to the adverse impacts of climate change and variability must be organized and implemented at the country level, this is clearly a Pacific-wide challenge. ADB's position in the region and among global players in this field means that it can play an important role by assisting at both the country and regional levels with the analysis of and response to threats derived from climate change and variability, including the consequences of sea-level rise and the increased frequency and/or intensity of extreme hydrological events such as cyclones and droughts.

ADB will adopt a programmatic approach to dealing with these threats on a regional basis, through a regional TA to coordinate such efforts. The goal will be to assist PDMCs as they work toward integrating climate change and variability adaptation measures into their development programs and projects through a "risk reduction" approach. Pilot activities at the country level—funded with grant and/or loan funds, depending on the nature of the required investments—will complement and follow from regional TA analysis. Given the global roots of the problem, ADB will also help PDMCs gain access to international assistance through such mechanisms as the GEF, with an overall goal of lowering the economic and social costs of climate change and variability in the Pacific and especially of reducing the risk of a resulting increased incidence of poverty. ADB also will work within its own programming processes to incorporate adaptation to climate change and variability into selected aspects of its Pacific operations.

Implementation Issues and Measuring Progress

Targets Set at the WSSD

Approaches to measuring progress and associated challenges have been mentioned throughout this strategy, and the targets agreed on at the WSSD constitute an important advance in efforts to standardize and improve performance assessment. The WSSD had three main outcomes: (i) the Johannesburg Declaration on Sustainable Development by the Heads of State, (ii) the Johannesburg Plan of Implementation, and (iii) Type II Partnership Initiatives (WSSD 2002). The Plan of Implementation lays out targets and timetables for improvements meant to further global sustainable development, and where possible these are correlated with the previously established MDGs (Box 12). These targets are divided into eight areas covering the following general topics:

- (i) poverty eradication,
- (ii) changing unsustainable patterns of consumption and production,
- (iii) protecting and managing the natural resource base of economic and social development,
- (iv) sustainable development in a globalizing world,
- (v) health and sustainable development,
- (vi) sustainable development of small island developing states,
- (vii) sustainable development for Africa, and
- (viii) other regional initiatives.

It is notable that, aside from the special attention given to the very poor nations of Africa, small island developing states (SIDS) were the only other countries singled out as deserving exceptional treatment in their efforts to cope with issues of environment and development. The special SIDS agenda also relates to a Program of Action for SIDS previously agreed on during the 22nd Special Session of the UN General Assembly and correlates closely with the Barbados Programme of Action (United Nations 1994).

The WSSD targets represent important commitments from the international community as well as the PDMCs to create the enabling conditions for achievement of

Box 12: Millennium Development Goals and Targets

The target date for achieving the MDG goals is 2015.

Goal 1: Eradicate extreme poverty and hunger

Target 1. Halve the proportion of people whose income is less than US\$1 per day.

Target 2. Halve the proportion of people who suffer from hunger.

Goal 2: Achieve universal primary education

Target 3. Ensure that boys and girls will be able to complete a full course of primary schooling.

Goal 3: Promote gender equality and empower women

Target 4. Eliminate gender disparity in primary and secondary education by 2005 and at all levels of education by 2015.

Goal 4: Reduce child mortality

Target 5. Reduce the under-five mortality rate by two thirds.

Goal 5: Improve maternal health

Target 6. Reduce the maternal mortality ratio by three fourths.

Goal 6: Combat HIV/AIDS, malaria and other diseases

Target 7. Have halted and begun to reverse the spread of HIV/AIDS.

Target 8. Have halted and begun to reverse the incidence of malaria and other major diseases.

Goal 7: Ensure environmental sustainability

Target 9. Integrate principles of sustainable development into country policies and programs and reverse loss of environmental resources.

Target 10. Halve the proportion of people without sustainable access to safe drinking water.

Target 11. Have achieved a significant improvement in the lives of at least 100 million slum dwellers.

Goal 8: Develop a global partnership for development

Target 12. Develop further an open, rule-based, predictable, nondiscriminatory trading and financial system.

Target 13. Address the special needs of the least developed countries.

Target 14. Address the special needs of landlocked countries and small island developing states.

Target 15. Deal comprehensively with the debt problems of developing countries through national and international measures in order to make debt sustainable in the long term.

Target 16. In cooperation with developing countries, develop and implement strategies for decent and productive work for youth.

Target 17. In cooperation with pharmaceutical companies, provide access to affordable essential drugs in developing countries.

Target 18. In cooperation with the private sector, make available the benefits of new technologies, especially information and communications.

sustainable development—globally, nationally, and locally. To the extent possible, all ADB activities in the Pacific region—and not just those described as “environment-related” in the PRES—should help to accomplish these agreed-upon targets and their associated goals.

Millennium Development Goals

As noted, many of the WSSD targets correlate closely with the previously agreed MDGs. These goals have been recognized as representing the best available minimum set of targets to use in measuring progress toward attaining the conditions needed to achieve sustainable development. At the Monterrey Conference in March 2002, ADB joined other multilateral development banks in agreeing to relate its Long-Term Strategic Framework for 2001–2015 to the MDGs and to examine how the MDGs could be reflected in country strategies and programs. With this commitment in mind, ADB has completed a review of PDMC progress in meeting these targets (ADB 2003b), including Targets 9 through 11 under Goal 7: Ensure environmental sustainability. Among PDMCs, a mixed record is indicated to date in their progress toward meeting the MDGs, and significant room for improvement is indicated with respect to fulfilling Goal 7. This further underscores the need for specific attention to improving environmental information collection and management in the region, as called for in the PRES.

Key Risks and Assumptions of the Strategy

The viability of the PRES approach over the period 2005–2009 is dependent upon several key risks and assumptions. ADB must be in a position to work with each PDMC based on domestic political stability and the fulfillment of other basic conditions of this relationship (for example, ADB operations are currently suspended in Nauru and Solomon Islands, and were recently disrupted in the Fiji Islands, due to security issues). It is also assumed that an adequate minimum degree of absorptive capacity exists in national and regional partner organizations, though institutional strengthening is an important dimension of all recommended actions. The development of strategic partnerships—especially working with a select group of regional organizations and NGOs over a multi-year period—represents a departure from the normal procedures for organizing ADB-supported technical assistance, so care will have to be taken to ensure that this is handled appropriately within ADB policies and procedures. The PRES also takes a longer-term and more programmatic perspective than is typical for ADB operations, so it remains to be seen how ADB’s programming and assistance systems will adjust to this mode of work. Finally, several of the regional initiatives envisioned in the PRES will be dependent upon the availability of grant co-financing from sources outside ADB, including the GEF and certain bilateral donor funds channeled through ADB.

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APPENDIXES

Appendix 1

PACIFIC REGIONAL SUBMISSION TO WSSD

(7 September 2001)

Vision

Achieving measurable sustainable development in the Pacific region towards improving the quality life for all.

Mission

Reinvigoration of the implementation of Agenda 21 to achieve priority outcomes, including from the WSSD, that reflect and respond to the people, oceans and island dimensions of sustainable development in the Pacific region.

Objectives

- (a) To ensure that the sustainable development priorities of the Pacific region are fully acknowledged and integrated in the World Summit on Sustainable Development process.
- (b) To secure and strengthen political support from the international community for programmes and initiatives that are essential to sustainable development of this region's people, their environment and natural resources.
- (c) To promote new and existing partnerships beneficial to sustainable development of the region.
- (d) To secure and mobilise resources to build capacity for sustainable development.

General Statement

We, the Countries of the Pacific region, share a common unique identity, and have a responsibility for the stewardship of our islands and resources.

Our Ocean has supported generations of Pacific communities—as a medium for transport and as a source of food, tradition and culture. Our present, and future, well-being is dependent upon it.

Our ecosystems contain high biological diversity that has sustained the lives of Pacific communities since first

settlement. They contain the most extensive coral reefs in the world, unique landforms, globally important fisheries, significant mineral resources and high numbers of endemic species. They may also contain many undiscovered resources of potential use to humankind.

To safeguard Pacific communities and maintain the health of our ecosystems, in perpetuity, it is imperative that we apply the precautionary approach as outlined in the Rio Declaration, Principle 15.

Overcoming the well recognized vulnerability of islands to the effects of global climate change, natural disasters, environmental damage and global economic shocks will be an essential element of sustainable development in our region.

Initiatives

Oceans

We are seeking

1. A renewed international commitment to sustainable management of oceans.
2. More effective, prioritized and targeted cooperation and coordination among regional and international organizations with responsibilities for marine and oceans protection and management, and relevant national agencies.
3. To develop and implement regional and national oceans policies so as to enhance the sustainable management of the Pacific Ocean and its resources.
4. Promote total ecosystem marine resources management through capacity building and pollution control measures and through further development of policy and program options to assist countries to sustainably manage their own marine and ocean jurisdictions.

5. Improved access to survey and monitoring technologies and the resulting products in order to ensure responsible and sustainable use of ocean resources and the completion of maritime boundaries delimitation.
6. The implementation of the United Nations Convention on the Law of the Sea and related conventions in an integrated manner, and support for the development of related national policies and legislation.

Natural Resources

To advance sustainable natural resource development and management, we are seeking

1. To further develop and implement legislation and policies at domestic, regional and international levels that promote sustainable management of natural assets, including enforcement, data collection, and ongoing assessment, evaluation and economic valuation.
2. Recognition of ownership and protection of indigenous practices and knowledge.
3. Access to appropriate technology, data management systems and research and educational capabilities.
4. A global initiative on freshwater to improve the quantity and quality of freshwater supply to all communities through better water resource catchment and watershed management, and improved and affordable technologies for desalination.
5. To sign, ratify and comply with existing natural resource conventions, such as those relating to biodiversity and land degradation.

Climate Change and Variability and Sea Level Rise

1. To encourage all Parties to ratify the UNFCCC Kyoto Protocol so that it comes into force, preferably in 2002. Its implementation is a significant first step towards achieving real and measurable reductions in greenhouse gas emissions.

2. To increase international and domestic action in addressing adaptation to climate change, climate variability, sea level rise and other climate change impacts.
3. Further commitments to reduce greenhouse gas emissions in the future.
4. To develop and promote adaptation strategies.
5. To mobilise resources for adaptation.
6. Consideration of all the implications of all adaptation needs, options and requirements.

Islands Vulnerability

In the pursuit of sustainable development for island communities we seek

1. The promotion of mutually supportive social, cultural, trade, investment, economic and environmental policies and goals in Pacific countries and the broader global community.
2. Effective measures to address the vulnerability of island communities and their ability to adapt to the consequences of climate change, sea level rise and human-induced and natural hazards.
3. Further research and development on the environmental vulnerability index and its implications by the tenth anniversary of the Barbados Programme of Action.

Energy

We seek to promote sustainable energy development through

1. Promotion of the development and use of renewable energy sources by removing distortions in energy markets.
2. Mainstreaming and commercialising the use of alternative renewable energy, which is more sustainable, to reduce its cost.
3. Encouraging energy efficiency.

The People

The people remain at the heart of sustainable development in the region. Recognising social equity for all, including gender, we seek the following initiatives that are essential for their well-being:

Health

1. Prevention, control and eradication of threats to health such as dengue, malaria and non-communicable diseases in an environmentally safe way by 2020.
2. Effective reduction, prevention and control of waste and pollution and their significant health related impacts.

Governance

To advance good governance in the pursuit of sustainable development, we seek the following initiatives:

1. Promote good domestic governance through appropriate levels of transparency and accountability and strengthening policies that are proactive and responsive.
2. Improve partnerships at all levels, especially with the private sector and civil society.

Capacity Building

Develop and implement a capacity building framework that is responsive to Pacific countries: an integrated and participatory approach that nurtures the well-being of individuals, families, communities and society and encourages and empowers people to take ownership of processes that affect them. This framework would include the following critical elements:

- Raising public awareness
- Strengthening technical capacity
- Full participatory approach involving all stakeholders
- Strengthening of existing institutions where weaknesses have been identified
- Evaluate and mobilize human resources
- HRD initiatives to alleviate poverty and promote gender equity;
- Implement the *Forum Basic Education Action Plan*;
- Upgrade and extend infrastructural services such as transport and communication networks to facilitate sustainable development.

We seek the convening of a ten-year review conference on the Global Programme of Action for the Sustainable Development of Small Island Developing States adopted in Barbados in 1994.

Financial Resources

Financial resources are imperative for the sustainable development of the region and in that connection we fully support the International Conference on Financing for Development as a key stepping stone to mobilize resources for sustainable development.

Appendix 2

SUMMARIES OF CASE STUDIES

CASE 1. The Funafuti Conservation Area, Funafuti Atoll, Tuvalu: Drawing Lessons for Future Marine Conservation Planning and Management

Background

Marine protected areas (MPAs) have gained wide acceptance among coastal planners, managers, researchers, and scientists as an effective tool that can be utilized to protect threatened marine and coastal ecosystems. MPAs allow depleted breeding stocks of important food fish and invertebrate species to regenerate and become reestablished, providing a foundation for sustainable fisheries. Typically, the MPA model comprises a core “no-take” conservation area, within which harvest of fish and other consumable resources is strictly prohibited, and a surrounding “buffer zone” in which nonintensive fishing practices are permitted. The full commitment and participation of the local community in planning, design, and implementation can ensure the long-term viability of such projects.

An MPA project, the Funafuti Conservation Area (FCA), was initiated at Funafuti, the main atoll and lagoon system of Tuvalu, in 1996. The FCA was established with the support of the South Pacific Biodiversity Conservation Programme (SPBCP), and administered by the South Pacific Regional Environment Programme (SPREP), in response to reported increases in fishing pressure and the threat of deteriorating environmental quality in Funafuti lagoon. The FCA has been regarded as highly successful by local residents, but information about the project has not been widely disseminated outside Tuvalu. As part of the Asian Development Bank’s (ADB) Pacific Region Environmental Strategy (PRES), a case study was prepared to evaluate the performance of the FCA project. One of the primary objectives of the case study, and of the PRES, was to gather lessons learned that could be applied in other contexts, and to determine ways in which environmental management could be effectively mainstreamed into government policymaking and economic planning.

Information obtained through review of secondary literature sources provided the initial foundation for the case study. Intensive consultative activities were also carried out in Tuvalu, and included (i) interviews with key informants who were involved in establishing, monitoring, or managing the FCA; (ii) round-table discussions with key stakeholders from the community; and (iii) questionnaires that were distributed to determine sentiment and level of awareness within the community about the FCA and general conservation issues. In addition, direct observations of biophysical conditions in the FCA were made during a series of SCUBA and snorkeling surveys. These field surveys were useful in providing an overview of relative resource abundance, biodiversity, and ecosystem health, and in drawing comparisons between prevailing conditions at sites within and outside the conservation area.

Findings

Based on the observations made and information gathered during the study, specific findings regarding the performance of the FCA project are as follows:

- Community members are generally supportive of the FCA. While acknowledging that there are certain weaknesses, they feel that it is producing beneficial results, and that it should be maintained as a no-take zone in which breeding populations of fishes and other organisms can be protected to sustain fisheries resources.
- Most respondents believe that fish populations have increased within the lagoon as a result of the establishment of the conservation area. Also, during field surveys, high biomass and biodiversity were observed at two of the three sites (Tefala and Fuafatu) visited within the FCA. Significant at these sites was the observation of large-sized individual fishes of highly prized target food species, such as groupers and snappers. The presence of so many large fish of desirable target food species appears to indicate that there is very low fishing pressure at these sites.

- While observations of high biodiversity and biomass were impressive at the FCA sites, these parameters also appeared to be roughly comparable at other sites outside the conservation area (South Fongafale and Tepuka). However, the sites within the FCA still appeared to have larger-sized individual fishes among the key target food species than at the sites outside the FCA.
- Two possible explanations for the fact that fish stocks at sites within and outside the FCA are almost the same in terms of abundance and diversity are: (i) the FCA is already functioning effectively as a source of biomass, and is exporting “spillover” biomass to other parts of the lagoon; and (ii) fishing pressure is relatively low (i.e., below maximum sustainable yield) throughout the lagoon, even outside the FCA.
- During FCA project implementation, intensive awareness-building activities were conducted, and were considered generally effective in improving local knowledge about conservation issues. However, these activities have all but ceased since the project ended in 2001.
- Monitoring and survey activities conducted as part of the conservation project were helpful in establishing baseline data about species composition and diversity within the FCA. These activities also helped to develop skills among technical staff in the Funafuti Conservation Office and Fisheries Department. However, in the future, other parameters need to be included, and methodologies need to be improved, in order to strengthen the monitoring process to enable detection of changes brought about through the management of the FCA.
- The FCA project provided an impetus for the passage of the Tuvalu Conservation Area Act of 1998 and of the Funafuti Town Council’s bylaws dated 16 December 1999. The national Act establishes a legal framework for declaring conservation areas nationwide, including possible

future conservation sites on the outer islands. The bylaws establish the regulations and procedures that govern the use of resources specifically within the FCA. While these are significant steps toward institutionalizing the FCA, an obvious deficiency is the lack of an integrated, community-based FCA management plan.

- While respondents and interviewees indicated that the planning of the FCA was carried out with the involvement of the community, they also pointed out that greater community participation will be needed to manage the area effectively over the long term. Presently, two conservation officers are handling practically all responsibilities for the management of the area, with very little assistance from the community at large.
- Voluntary compliance with restrictions on fishing within the FCA no-take area has been at a high level, but because enforcement efforts are weak, some violations continue to occur. Organized enforcement efforts are hampered by a lack of trained staff, inadequate funding, and anomalies in the legal and judicial system that make it difficult to prosecute violators. Recent incidents of “permitted catches” within the no-take area also undermine conservation efforts.
- No practical mechanisms for sustainable financing were put into place as part of the project. As a result, conservation efforts were cut back severely once project funding from SPREP ceased, resulting in a feeling of frustration and disappointment among stakeholders.
- For conservation activities to be sustainable, it is essential that government policymakers understand fully the significance of the resources being protected, and move toward mainstreaming conservation efforts into the national development and economic agenda. The Government’s commitment and support for such efforts can help in protecting resources of national importance for present and future generations.

Lessons Learned

Based on the findings of the FCA case study, a number of key lessons emerged. These are consistent with lessons learned from evaluating past MPA projects from other countries. The most significant are as follows:

- An MPA such as the FCA, if successfully managed, can produce important tangible benefits. Among these are (i) increased awareness within the community about environmental and conservation issues, (ii) preservation of biodiversity, and (iii) actual increases in fish biomass, resulting in increased sustainable fishery yields.
- Traditional systems of fisheries management can form the basis for developing an effective management framework. However, each situation is unique and needs to be evaluated individually to determine how best to integrate traditional and nontraditional methods into a system that is most appropriate within any specific biophysical, socioeconomic, and cultural setting.
- Community participation is key to ensuring the long-term sustainability of any marine conservation program. Community participation is especially crucial in the planning and design stages. It is also critical in various aspects of implementation, especially in monitoring and enforcement.
- Monitoring methods should be developed that can produce the most useful data for measuring changes over time, especially those changes that might be due to improved management and conservation within an MPA. Biomass and fish size distribution are two parameters that are especially important in this regard.
- A no-take zone cannot be managed in isolation. No-take zones are simply the “core” zones of MPAs. It is important to coordinate the management of these zones with the management of activities occurring in surrounding areas. An ecosystem approach should be used to define the management area (whether it be a lagoon, a small island ecosystem, a watershed, or other readily identifiable ecological unit). A comprehensive, integrated community-based

management plan should be developed to guide activities within the management area.

- Selecting an area that is not under intensive pressure, either from heavy fishing activity or due to serious environmental impacts (e.g., from pollution or land transformation), increases the chances of successfully maintaining healthy marine biodiversity resources and breeding stocks for fisheries within an MPA. Proper management under these conditions can help to protect biodiversity for future generations.
- Sources for sustainable financing need to be identified early in the planning process, and mechanisms put in place to capture revenues that can support management efforts over the long term. Failure to secure sustainable financing can lead to frustration and disappointment, and can ultimately undermine the conservation effort.
- It is essential that the national and local government give full institutional support for conservation initiatives such as the FCA project, through “mainstreaming,” which requires inclusion of conservation objectives within overall national and local policymaking and economic planning. Specifically, this entails promulgation of appropriate laws and regulations, establishment of institutional structures that may be required for effective management, development of effective and comprehensive management plans, and identification of fund sources and allocation of funds where needed.

A rough calculation of expected costs and benefits for improved management of the FCA was undertaken. Capital costs and recurrent costs for improved management over a 5-year timeframe were estimated. The value of benefits was derived from past studies of similar conservation projects. Values such as increased fisheries productivity, the coastal protection function provided by healthy coral reefs, and improved opportunities for ecotourism, ocean recreation, and similar revenue-generating activities, were taken into account. The calculation showed an estimated net economic benefit of A\$163,120/year to be realized through more effective management of the FCA. The net benefits to the country could be further multiplied by increasing the size of the management area, or by

replicating the conservation project at other sites on other atolls around the country.

Based on the case study findings, a series of recommendations is made for strengthening the management of the FCA. These include improving the monitoring methodology; increasing public awareness; developing an integrated management plan for all of Funafuti lagoon; improving enforcement; building capacity, both within government departments and through strengthening of nongovernmental organizations and other community-based groups; and developing mechanisms for sustainable financing, especially through promotion of ecotourism and ocean recreation.

It is also recommended that possibilities for replicating conservation areas on the other atolls of Tuvalu be explored. On several other atolls where traditional management systems have been established, residents represented through their town councils have called for assistance in setting up formal conservation areas. In designing any such management systems, consideration should be given to determining how best to combine traditional and nontraditional management elements. A similar approach should be taken if replication of the FCA model is considered for other Pacific island nations. Possibilities for establishing a regional network, which could link conservation areas in various countries, should also be investigated.

The importance of mainstreaming conservation efforts, so that they are fully integrated into overall national development planning, policymaking, and economic budgeting, cannot be overemphasized. As demonstrated in the cost-benefit analysis, improved protection of fish breeding stocks and related natural resources in MPAs such as the FCA can result in significant net economic benefits for the nation. Working in close collaboration with community stakeholders, the Government must commit itself, in the form of legal, institutional, and financial support, to ensure that effective management is provided on an ongoing basis.

Cross-sector linkages provide opportunities to strengthen conservation efforts. In Tuvalu, conservation activities within MPAs can be linked to other activities of the Fisheries Department (for example, using these sites as restocking areas for giant clam and other mariculture products, and for research), to ecotourism development, and to outer islands development (among others).

At present the Government of Tuvalu does not have the capacity to fully execute and implement all the activities that are required for optimizing a national marine conservation program. For this reason, it is recommended that a team of specialists provide the required technical assistance to help prepare the community, train assigned personnel, and help coordinate a range of community-based planning, design, and management functions.

In summary, the FCA project has been relatively successful, and can provide a useful model for similar marine conservation projects at other sites within the country, around the region, and beyond. It should be noted that the generally low fishing pressure within Funafuti lagoon as a whole is probably a significant contributing factor to the successful results observed within the FCA. This is in sharp contrast to the case in more populous nations, such as the Philippines or Indonesia, where such results are much more difficult to achieve. The success of the FCA project in Tuvalu points precisely to the urgent need, in nations where fishing pressure is presently beyond sustainable limits, to consider all reasonable means to bring these pressures under control. Only if this is done soon will there be any hope of achieving sustainability of the fisheries resources that are so vital to providing the people of these nations with their basic sustenance.

CASE 2. Strategic Environment Assessment of Fiji Islands' National Tourism Plan

Background

The Asian Development Bank (ADB), in cooperation with the Government of New Zealand is formulating the Pacific Region Environmental Strategy for 2005-2009. This will review major environmental challenges in the region and put forward strategic objectives and activities for ADB assistance.

To help in achieving this, case studies are being conducted to develop and test—in cooperation with partners in the Pacific—various kinds of tools and approaches and methodologies for policy integration. These case studies are intended to guide ADB on appropriate strategies for mainstreaming environmental

dimensions into its economic and social development interventions.

The World Wide Fund for Nature–South Pacific Programme (WWF-SPP) and ADB formed a partnership agreement to carry out a “Strategic Environmental Assessment of the Fiji Islands’ Tourism Development Plan.” This case study was chosen because tourism is the fastest-growing industry in the Fiji Islands and is having potentially significant impacts on its natural and social environment. In addition, the project coincides with a mid-term review of the Fiji Islands’ Tourism Development Plan (TDP) planned for 2003.

The Case Study

The basic objectives of the study were to

- Inform the 2003 mid-term review of the TDP by assessing the environmental and sustainable development impacts of the current Plan in order to help the Ministry of Tourism and its partners make future plans as sustainable as possible; and
- Test the usefulness of Strategic Environmental Assessment (SEA) as a tool for improving the sustainability of strategies and plans in the Asia-Pacific region, with a view to using it more widely.

WWF-SPP formed a project team, which carried out the assessment in March and April 2003. A consultation strategy was devised to ensure full stakeholder participation. As a first step a Memorandum of Understanding was drawn up between WWF-SPP and the Ministry of Tourism. The two parties agreed that the SEA would provide the environmental and social elements of the midterm review. An Advisory Group, made up of key players within the tourism sector in the Fiji Islands, was formed to help guide the process.

Fiji Islands’ Tourism Development Plan

The TDP calls for “step change” growth in tourism. The strategy argues that the Fiji Islands must move away from “bumbling along” much as before, with a modest increase in the accommodation stock, to a large-scale growth in its tourist industry. This growth is viewed as critical to compensate for foreign-exchange losses in

the ailing sugar industry. The plan suggests a number of policies to assist the Fiji Islands in achieving this change.

The Strategic Environmental Assessment Process

A Strategic Environmental Assessment (SEA) was carried out to understand the likely environmental and social impacts of the plan. This was achieved by comparing the current environmental, social, and economic baseline and likely trends under the TDP against sustainability objectives. This allows an assessment to be made of whether or not the TDP is sustainable.

The Main Findings from the SEA

- At the aggregate level, the environmental impacts of tourism have not been all that significant. However, there are particular areas where it is causing serious environmental degradation. Here the situation is extremely precarious. Many environmental pressures, for example on coral reefs, are close to levels at which irreversible damage could occur. Further pressures could tip the balance, resulting in long-term environment damage.
- Tourism is currently providing considerable economic benefits to the Fiji Islands. However, these economic benefits are far smaller than those the gross tourist spending figures suggest: some estimates indicate that more than 60% of the money coming in leaks back out of the country. Moreover, the loss of earnings from other sectors, especially the sugar industry, leaves the Fiji Islands’ economy highly dependent on the tourism sector.
- The kinds of “step-change” large-scale, high-investment tourism advocated in the TDP would tip the balance. This type of development is highly demanding of the natural environment in terms of resources used and pollution generated. In fact, seeking “step change” in tourism development is likely to cause problems affecting a number of sustainability objectives; in particular it is likely to lead to growing tensions between tourist developers, landowners, and local communities.

- While a lot of tourism developments are following good practice, the Fiji Islands lacks the frameworks to enforce it. Much of the policy, legislation, and regulation needed to ensure such enforcement already exists, on paper. However, much of the necessary legislation has not been enacted; or if enacted, it has not been implemented or applied.

Conclusions and Recommendations

In the Fiji Islands, a cautionary approach to future tourism development is required: that is, weight should be given to safeguarding the benefits and advantages the country currently has, given the resources and constraints it possesses, and any actions that could cause serious environmental harm or create further social tension should be avoided.

The Recommended Direction for Tourism in the Fiji Islands

- Set growth objectives and targets for tourism in terms of benefits to the Fiji Islands rather than as gross volume of traded activity, and treat (and evaluate) expansion in tourism activity as a means to increase the benefits for the Fiji Islands, rather than as an end in itself.
- Concentrate support on those kinds of tourism that put more into local economies and have lower leakage, such as ecotourism, community-based tourism, and non-“packaged” travelers.
- Establish effective “bottom-up” planning of tourism at the province and *tikina* level, and permit only tourism developments that are approved through such a process. A prerequisite for this is to build the capacity of local communities to understand the options available to them and make informed decisions.
- Design and successfully implement programs to substantially reduce economic leakage from resort-based tourism. A prerequisite for this would be a rigorous study establishing the real economic leakage from different kinds of tourism activities in the Fiji Islands.

Recommended Steps

- The Government of the Fiji Islands must implement and enforce the environmental policy, assessment, and management framework that already largely exists on paper. In particular, the Sustainable Development Bill (SDB) should be enacted as soon as possible and fully implemented, including the necessary budgets and resource allocations. This will provide much of the machinery required.
- Many of the detailed policies and proposals in the TDP should also be fully implemented.
- All tourism development should be required to meet minimum impact standards unless a properly specified environmental impact assessment identifies any “headroom” for impacts.
- An environmental fund should be established from user fees charged to visitors.

These directions may appear inconsistent with the TDP’s policy of “step change.” In fact, many of the detailed policies in the TDP would further the kinds of activities that would help promote sustainable tourism. However, much of this has not been enacted; or if enacted, has not been implemented or applied.

By following the above guidelines the Fiji Islands will be able to develop tourism at a pace and scale that is more in line with the resources and constraints that exist within the country and that will bring long-lasting benefits to the country.

Lessons Learned

The SEA process provided a robust and logical structure to assess the environmental and social impacts of the TDP. The project raised important points about emphasis and use, which should be reflected in future SEA applications in the South Pacific, as well as any guidance produced:

- The assessment benefited considerably from the existence of a number of related studies carried out in the region, and a large number of local experts who were able to advise and

guide the project. However, where information was lacking, the assessors were able to make judgments based on the best available information. Important issues should not be discounted because of data unavailability.

- The assessment shows the importance of looking at social and economic issues together with environmental issues. This proved vital for gaining a good understanding of the situation and formulating practicable and achievable recommendations.
- SEA guidance assumes that once a strategy or policy is duly adopted, or laws or regulations enacted, that they will be enforced. In the Fiji Islands, however, much of the policy is not implemented. Therefore, the assessment of current policies must ask both what is “officially” stated and what is really happening on the ground. Assessments must avoid making recommendations for which implementation capacity does not exist.
- A critical component of the SEA process is the consultation strategy. In the assessment, a highly able and effective group of people representing a range of stakeholder interests took an active part in the advisory group meetings. Without their participation and full support, any recommendations from the report would be unlikely to be taken forward. Sufficient time must be set aside to communicate and work with key stakeholders. If there are sceptical stakeholders, a concerted effort should be made to work with them and find common ground.
- In terms of SEA management, having a locally based project champion once the consultants depart is a critical element. Members of the advisory group must be expected to champion the work and help push through the recommendations.
- It is important that the role of the consultant be constructive, build local knowledge and expertise, and give local organizations and people ownership and capacity. The short time scale of the project meant that more of a top-down approach was adopted—the consultants

producing and then trying to “sell” a package of recommendations—than was desired. It also meant that the project hardly achieved any transfer of skills or capacity to local people. Such capacity building needs to be built into the project before its inception.

- Working through an NGO proved effective, as it can act as an arbiter between groups that have divergent viewpoints.
- How ADB (and other potential aid agencies) respond to the recommendations of the report will make a big difference to its effectiveness.
- ADB should consider commissioning guidance on applying SEA in the specific circumstances of the Pacific. The experience of the Fiji Islands tourism pilot provides a valuable starting point, but any guidance derived should be tested on a range of plans and countries to determine its breadth of applicability.
- Provided the lessons are taken on board, ADB should promote SEA as a valuable tool for sustainable policy development in the Asia-Pacific region.

CASE 3. Integration of Traditional and Modern Systems of Environmental Management and Use of Public-Private Partnerships in Natural Resource Management and Tourism Development in the State of Yap, Federated States of Micronesia

Objective

As part of the preparation of the Pacific Region Environmental Strategy (PRES) the Asian Development Bank (ADB) has funded a field study in Yap State, Federated States of Micronesia, of traditional approaches to the management of natural resources and their relationship to modern resource management and to the development of tourism. It is intended that this study contribute to PRES guidelines for environmental sustainability and be of general use to other Pacific island members of ADB.

The objectives of the study are to evaluate (i) how traditional systems have played a role in natural resource management and in development, (ii) how traditional systems could be productively integrated with contemporary approaches to resource management, and (iii) how public-private partnerships have been employed in the development of tourist destinations in a Pacific island nation and could be employed in future development.

The study examines, through interviews of locally involved person, the decision-making processes employed for the development of four resorts. Two are small locally owned facilities using traditional island design and two are larger, more complex and internationally or expatriate-owned and -operated facilities. Through the same interview process, the study examines the traditional methods of natural resource management, how the traditional and modern state approaches have conflicted with or complimented each other, and how they can be better integrated in the future for more sustainable environmental management.

Background

Government

Yap is one of four states in the Federated States of Micronesia (FSM). Within the federation, Yap State is a constitutional democracy with great independence to set its own policies and operations.

Respect for tradition is incorporated into the constitution of Yap State, into the legal code, and into the very structure of the government where, in addition to the normal executive, legislative, and judicial branches, a fourth branch comprises two councils of traditional leaders.

Traditional Leadership

Respect for the traditional culture and for the traditional leaders in Yap is still strong, though the observance of traditional practices and rights is weakening as Yap progressively enters the cash economy and adopts modern technology.

The traditional method of natural resource management in Yap is based on very complex systems of both traditional leadership and land tenure. In the traditional culture of Yap, a geographic area does not

normally have just a single leader or “chief.” Any single village and its lands are governed by complex hierarchies of village and family structure, and by multiple leaders of different rank, each with specific cultural and operational responsibilities and authority. One of the leaders, not necessarily the most senior, has responsibility for the stewardship of the land, and another has responsibility for stewardship of the water or marine resources.

As part of the system of multiple and specialized leadership roles, decisions are normally taken consensually, through community discussion from which the responsible leader gauges the consensus and announces it as the decision of the community. The Yapese culture is very nonconfrontational, and it is often difficult for individuals to speak their opinion.

Decisions are taken for the overall welfare of the community, whether at the village or regional level. As much of the work in the past was done communally (e.g., fishing and building fish traps, building boats or houses, and repairing the stone paths that connected communities), members of the community were able to discuss issues with deliberation, and usually a consensus emerged without confrontation.

Land Tenure

Land tenure is extremely complex and has significant implications for future development and management of natural resources. Some land or water may be held communally, but for most the right to use the resource is owned by individuals and is inherited in an equally complex hybrid matrilineal/patrilineal system. While the “owner” enjoys the exclusive use of the resource, the nature of that use is subject to the guidance or limitation of the traditional leader who has responsibility for stewardship of the resource. The owner has the right to take resources from the area for the welfare of his own family, but more extensive use, such as fishing by net or agriculture for sale, is subject to the decision of the appropriate traditional leader.

Because of its importance, land has been divided through inheritance until most of it is in small parcels. Less than 10% of land in Yap has been surveyed and titled. Many disputes over boundaries occur, and because several persons may be named as owner it is often difficult to title the land. Tourism facilities have thus far been built on small footprints of land owned by the entrepreneur or

on land in Colonia that is or was owned by the state. Any future development of tourism, especially dispersed ecotourism outside Colonia, will face significant barriers in acquiring clear title or access to land that will be acceptable to investors. Foreigners and foreign companies are not allowed to own land in Yap.

Findings

Natural Resource Management

The traditional systems of natural resource management are extensions of the very complex systems of traditional leadership, community cohesiveness, and land ownership. The objective in the traditional system of stewardship of the natural resources was to assure sufficient food and shelter materials. Achieving that objective of course required sustained yield and productivity from the natural systems, but the system contained no distinct concept of the sustainable use of natural resources. The consensual manner in which decisions were made and the ownership and authority patterns over the land and marine areas served to limit who could use the resources and how they could be used to meet a complex set of community needs and obligations. The available technology (e.g., stone fish traps and heavy hand-made nets) was such that its use within the ownership system could not easily exhaust the resources, and marine populations and land fertility remained stable. It was not necessary to plan for the management of natural resources, and such planning was not part of the traditional culture.

These traditional systems of natural resource management have been increasingly unable to regulate the use of either marine or terrestrial resources in the sustainable manner that they once did. Weakened traditional authority and loss of community cohesion make it difficult to stop widespread poaching in violation of individual fishing rights, and technological changes allow an individual or small group to overfish an area where previously the entire community fishing together and limiting the entry of other communities did not deplete the stocks. Certain fish species have almost disappeared, and it is widely recognized that marine resources are endangered.

The greatest single impact on the marine resources has been the introduction of the small-mesh

monofilament nylon net that has made lagoon fishing so easy that fish stocks inside the reef are being decimated. The traditional leaders recognize that this is a problem, but the traditional system of stewardship seems unprepared to deal with the issues and unable to stop the process.

Increasing variability in weather conditions has produced more extreme storm conditions, causing substantially increased erosion and saltwater intrusion into coastal agricultural lands. The loss to saltwater intrusion of important taro-producing land at the coastal fringes has caused interior land to be cleared for garden patches, with resulting steady increase in loss of already diminished forest cover. Traditional methods for the multiple use of agricultural land for higher productivity and sustainable yield have been largely lost, and the weakened traditional authority and community cohesion apparently preclude either reintroducing traditional agricultural methods or stemming the continual clearing of more land.

The state government has organizational units to plan and manage both agriculture and marine resources, but these units lack sufficient trained staff and funding to undertake effective outreach programs. The state management units meet resistance from the traditional system that sees state government as intruding on traditional usage rights, while the traditional system is itself unable or unwilling to confront and deal with the steadily deteriorating resource base.

Very little integration of traditional and modern systems of natural resource management has taken place. Traditional systems prevail by default, even in their weakened form, because the government is reluctant to confront traditional land and water use rights. Communications between the state government and the traditional leaders and communities are weak, sometimes clouded in mutual suspicion; the latter generally assume that the state is focused on economic growth, balance of payments, foreign investment, tourism promotion and other such "modern economy" issues and not concerned with the problems or opinions of the traditional leaders and communities.

The two councils of traditional leaders, established constitutionally among other purposes to avoid such a communications gap, have in most cases been unable to do so effectively, becoming more involved in the modern economy issues of the government. Lack of effective

channels of communication has made it difficult for state agencies to reach understanding with leaders and communities on the common objectives and interests for traditional and modern approaches to management and how they can be beneficially integrated.

Tourism

Tourism in Yap is of limited scale relative to its neighbors, Palau and Guam. On the main island of Yap are seven relatively small hotel facilities, ranging in size from 4 to 24 units and totaling 100 rooms and on the outlying island of Ulithi, one hotel of 10 units. Tourism is very important to the Yap economy. The Yap Visitors Bureau estimates that tourists spend US\$3 million annually in Yap, a significant amount relative to Yap's annual gross domestic product of about US\$40 million. It is believed that more than 80% of tourism revenue is connected to diving, which is in turn heavily dependent on the famous manta rays that can be seen year-round.

All but two of the tourism facilities are in Colonia, the capital of Yap, which has a population of about 1,000 persons. All facilities in Colonia are on small areas of land, are connected to the municipal waste treatment system, and have thus far had little impact on the environment or the natural resource base. Little growth in tourism has taken place since the 1997 Asian financial crisis.

The people of Yap are aware of the social and environmental problems that large-scale tourism has brought to some of their neighboring islands and they want a different future for Yap. They recognize, however, that Yap has very limited resources to export or by which to attract foreign investment, and they therefore assume that their future is tied to the development of tourism. While they have fragments of a vision of future tourism, no plan or strategy has emerged as to how they will expand their current level of tourist arrivals and capture new markets.

Public-Private Partnerships

None of the four tourist facilities studied involved any significant form of public-private partnership. Of the two larger facilities, one was built on land created by fill, owned by the state, and sold to the developer and present owner and operator. The other is built on land leased from the state and through former colonial powers long ago alienated from any traditional ownership.

Of the two smaller facilities studied, one is built on land in Colonia purchased through traditional means (e.g., stone money and other obligations) by the Yapese family that owns and operates it. The other is outside Colonia and is built on land owned traditionally by the developer and operator. In both cases, the facilities are built on land still within the traditional system of ownership; traditional obligations still connect to the land.

Two attempts at public-private partnerships in tourism have been made in which private capital partners allied with a village or community. A large development was being negotiated between a municipality and a developer when investors withdrew during the Asian financial crisis. Another smaller venture was started in a partnership between a village and an American investor, but the facility was destroyed by a typhoon in 2001 when only two units had been built and it was barely operational. Though the concept seems acceptable, no real test of it in practice has occurred.

Recommendations

Four strategic recommendations have been derived from the study as programmatic guidelines that will enhance environmental sustainability of the use and management of natural resources, including for the development of the tourism industry. These recommendations reflect the comments and the recommendations of the people of Yap who were interviewed and are made with reference to conditions and issues in Yap. However, they are based on problems that are pervasive among the Pacific island countries. Specific actions to implement each must be tailored to the particular conditions in the location concerned.

Identify Shared Goals and Plan Strategically

When asked what they want for Yap, most Yapese answer with a number of common elements, including respect for traditional values, controlled progress into the modern economy, better education and health care, development of high-end ecotourism, preservation of the environment, better infrastructure, etc. But these issues have not been openly discussed in any forum, and no generally accepted statement of a vision for Yap, or of how the commonly held values and objectives will be achieved, has evolved.

Many Yapese feel that the government is pursuing economic development (e.g., trade, infrastructure, etc.) rather than development that focuses on bringing a better quality of life for many people. Development should be based on broad agreement as to what the government and the people are trying to achieve and the values and priorities that comprise that vision. So long as no open discussion of issues or general agreement on values and a future for Yap takes place, it will be very difficult to integrate traditional forms of natural resource management with modern management techniques. Integration will require using the tools and leverage of traditional authority and community cohesiveness, working together with state government science and expertise, to achieve common objectives relating to the sustainable use of natural resources.

Build Government-to-Community Communications

Communications between the state government and the communities are poor; effective channels of communication must be built through systematic contact. The councils of traditional leaders have not fulfilled their intended role as communicators between the government and traditional leaders. State government agencies have tried, largely unsuccessfully, to communicate with the municipalities, but need to do so more, more systematically, and with a willingness on the part of government to listen rather than direct. Such a program will gradually create understanding through which the community and the state government can develop cooperation. Development programs must support the efforts of state agencies to mount well-thought-out and systematic processes of communications with the people.

Agreed goals and a shared vision of the future are essential as a basis for selecting courses of action that integrate traditional and modern concepts and tools for management of natural resources. Development of a commonly held strategy must begin in the communities and progress up to the state level. Forums should be conducted at the community level to identify community visions for the future, and those should collectively build a state vision. A vision developed at the top and passed down to the communities will be viewed as poor communications between state and community.

Strengthen Community Cohesion and Action

Traditional management of natural resources was based on the needs of the community, but more importantly on cohesion within the community that caused its members to communicate often among themselves and to understand their common needs and best interests. The advent of the cash economy and modern technology has caused the community to break down as an entity, with the result that its members and leaders often do not understand the issues of sustainable use of natural resources and are no longer able to act as an entity to enforce their collective will (e.g., prevent widespread poaching and use of gill nets).

Development programs should address the problem of creating community awareness and cohesion, supporting community forums and education to identify common problems and possible solutions. Communities also need the means by which to take action. A strong and focused community is a critical tool for sustainable management of natural resources in Yap. Without it sustainable management may in many cases not be achievable at all, especially since a strong enforcement capability will always be both too expensive and culturally unacceptable.

Promote Public-Private Partnerships

While public-private partnerships are relatively unknown at present, the concept fits well with traditional concepts of the role of the community or village in the management of natural resources. Partnerships should be supported through development programs at all levels. They will provide stability by engaging more stakeholders in the active management of resources, preventing resource owners from feeling taken advantage of by developers and investors.

Development of ecotourism requires access to substantial land and water resources. With the prevailing complex system of landownership, partnerships may be the only way that such development will be possible. Most Yapese, when asked, responded that a public-private partnership between an outside investor and a community for the development of an ecotourism destination might be the only way such a venture could access the land and water resources required. In such a venture the community would hold an equity interest in

exchange for the guarantee of access to land and resources and over time would take an increasingly active role in the actual management of the facility. Development programs should build the institutional capability—the business and community advisory and legal services—to initiate and develop such partnerships.

CASE 4. Application of Traditional Environmental Management Practices, Knowledge and Values to Solid Waste Management on Majuro Atoll, Republic of Marshall Islands

Background

The Republic of the Marshall Islands (RMI) is composed of 29 atolls and 5 low-elevation islands in a relatively remote part of the north-central Pacific Ocean. A fragile ecosystem and a limited resource base (a total land area of just under 110 square kilometers) have caused the Marshallese to share a strong affinity with, and dependence on, land and ocean resources for their livelihood and economic development.

The traditional way of life has been, of necessity, an ecologically sustainable one; care of the environment is essential in order that future generations may benefit from the resources. However, the introduction of a cash economy and the need to satisfy increasing financial demands have led to growing pressures on natural resources. Environmental degradation is now becoming more visible in the urbanized areas, where resource use and rapidly changing lifestyles are generating nonbiological wastes such as aluminum cans, plastics, and abandoned vehicles. Solid waste accumulation is a problem in the population centers of Majuro and Ebeye.

While life skills, agriculture, and other more practical subjects are taught in schools, they are generally based on the latest technological findings, with inadequate emphasis on the use of traditional, ecologically sustainable techniques. Indeed, due to recent sociocultural changes and modern influences, awareness and understanding of the importance of traditional practices that have been important to past generations are now disappearing. To restore a sustainable ecology in the RMI, it is deemed necessary to promote traditional environmental management (TEM) by encouraging the incorporation of environmentally

sustainable traditional practices with nontraditional practices. For the purposes of this case study, the term *traditional* refers to “knowledge, practices, and values that are accepted as legitimate today because they have a foundation in the recent or ancient past.”

The concepts of promoting TEM practices and empowering traditional leaders to enhance the environment have been discussed at various Pacific forums for over 20 years. Some very successful models of TEM (e.g., soil conservation on steep hillslopes in Papua New Guinea) have already been established in the Pacific, including the RMI (e.g., the Canoes of the Marshall Islands project, building wind-powered craft from locally available materials).

Natural Resources and Environmental Management Issues

With a mean height above sea level of just 2 meters, the low lying atolls of the RMI are particularly vulnerable to climate change and sea-level rise, which under a worst case scenario could render much of the RMI uninhabitable. Increased storminess combined with a higher sea level would increase both the rate and extent of coastal erosion. Higher sea levels would also reduce the available land area, the extent of arable land, and the volume of the freshwater lenses.

Of all the islands of the RMI, only one (Mejit) has a fresh-to-brackish-water lake. All the other islands rely on either rainwater capture or, on the larger islets, exploitation of shallow groundwater lenses. These freshwater (Ghyben-Herzberg) lenses are particularly vulnerable to overextraction (which tenders them saline) and are easily contaminated. Indiscriminate waste disposal on the land has led to the contamination of most of the RMI's shallow groundwater resources. The soils on the islands of the RMI are, for the most part, highly permeable and very low in nutrients and exhibit high surface salinity, making them generally unsuitable for agriculture.

High birth rates and inward migration from the outer islands have resulted in extremely high rates of population growth on Majuro and Ebeye, resulting in severe overcrowding in poorly constructed houses packed together without adequate sanitation and solid waste disposal, and some of the highest population densities in the world (over 2,500 per square kilometer in Majuro).

The lagoon and near-shore reefs have traditionally been a major source of food and protein for the Marshallese. Destruction of the coral reefs has been occurring as a result of mining for aggregate (sand and gravel), dredging, channel blasting, and boat anchoring. Coral death has also resulted from rapid algal growth arising from high nutrient loadings associated with domestic waste disposal.

Solid Waste Management Issues

Traditionally, disposal of solid waste has been to ground. In the past, with low population densities and with most waste consisting of locally sourced biodegradable products, such disposal presented few ecological problems. Now however, with high population densities and each household producing significant quantities of both biodegradable and nonbiodegradable solid waste, such materials are accumulating on both the limited areas of land and the marine waters at ecologically damaging levels. Organic materials account for some 50% of solid waste on Majuro.

The traditional land tenure system has often constrained government-led initiatives to improve the urban environment and conserve biological diversity. The issue of integrating customary landownership practices with government-enforced regulations has been one that the country has grappled with for some time. As all land in the RMI is in traditional forms of private ownership, the Government has no effective power to impose land use controls. Landowners have often been reluctant to accept regulation of solid waste disposal or other measures that may affect their rights to do what they want on their land. This has presented significant problems for government-led initiatives in solid waste management (SWM).

At present there are very few constraints on what can be imported into the RMI, and what forms of packaging it arrives in. Once on the islands, moreover, few incentives exist for its eventual removal once it has served its intended or useful purpose. Accordingly, large quantities of abandoned solid waste items are accumulating on the islands, particularly Majuro, which need to be disposed of.

Many of the wastes disposed of in Majuro have a high potential for recycling. From recent investigations undertaken by the Government, two different types of

recycling programs appear to be feasible: commodity recycling, which includes food and beverage containers, and organic waste recycling, which includes food waste and wood waste. Paper and cardboard, which constitute very high relative percentages of the waste because of the need for packaging for imported consumer and food products, can be recycled either as commodities or as organics.

The Government study also concluded that 50% or more of the waste stream is compostable (including the cardboard and paper) and that aluminum cans and plastic polyethylene terephthalate bottles form a very large part of the solid waste. The high percentage of plastic water bottles is considered to be a reflection of the poor water quality on Majuro.

To date, recycling efforts have been minimal and focused on sporadic aluminum can collection at a handful of locations and a brief effort by the RMI Environmental Protection Agency. Some small-scale organic waste recycling has been undertaken at the Taiwanese experimental farm in Laura and, in the past, some research on trench composting was done at the College of the Marshall Islands Laura campus.

Applications of TEM to SWM in Majuro

With the very high percentage of organic material currently being disposed of to the landfill, the TEM practice of mulching or composting organic material, both to increase the fertility and to assist with water retention of the sandy soils, clearly has an application for SWM on Majuro. First, however, the organic material needs to be separated from the waste stream so that this can be treated using traditional methods of disposal such as mulch and/or compost. Before this can be undertaken, it is necessary to make people aware of the difference between biodegradable and nonbiodegradable materials, and what materials can be recycled.

Because of the land tenure system and the traditional leadership structure, the support of the traditional leaders (*alaps*) is essential for the successful implementation of any SWM initiative. Accordingly, by resurrecting the traditional values espoused in the *Jabonkanaan*, or "wise sayings," traditional support might be found for the idea that the community, under the leadership of the *alaps*, should take collective responsibility for dealing with the problems of solid waste accumulation on Majuro.

RMI TEM Project

The TEM project in the RMI sought to apply TEM knowledge, practices and values to addressing the SWM issues on Majuro Atoll, and the most densely populated villages (Delap, Uliga and Darrit, or D.U.D.), where the SWM problem was most severe. The TEM practice to be promoted was the separation of organic waste for use as vegetation mulches, to enhance the fertility and water retention capability of the soils, and reduce the quantity of waste requiring disposal in the landfill.

The TEM value to be promoted was *jimor wodjipel ra eo bunwoj*, “spirit of coming together for a common cause that is the responsibility of all,” a “wise saying” that encourages unity of the people for the sake of the common good. It is particularly relevant to the TEM project because it reinforces the fact that the protection of the environment and the responsibility for the management of the natural resources of the RMI is the responsibility of everyone.

To carry this out, information on traditional knowledge, practices, and values was compiled from both primary sources (an alaps workshop and follow-up by the alaps to identify other traditional knowledge holders in their *wetos* [parcel of land]) and secondary sources, through the assistance of the Alele Museum and the Historical Preservation Organization, which collected, compiled and published *Jabonkanaan*, which express certain values and wisdom that bind the Marshallese culture together. Also identified through the alaps’ meetings were traditional conservation practices called *mo*, the setting aside by a traditional leader of a land or marine area as “taboo.”

Public awareness about the project and about TEM applications to SWM was raised through videos, an activity booklet, school presentations by the Environmental Education Officer, radio spots, computer presentations, community meetings, and workshops, among others.

Mainstreaming TEM

The TEM project appears to have been highly successful in terms of raising the profile of traditional leaders of Majuro. It has clearly improved their status and morale, and the knowledge of both the leaders and the community has been enhanced as a result of the meetings, workshops, and computer PowerPoint presentations undertaken by a strengthened EPA. The project has also initiated discussions on how the role of traditional leaders may be integrated into current decision-making systems with respect to SWM on Majuro. TEM-related aspects have also been incorporated into many of the strategies to achieve several key objectives relating to SWM in the latest 15-year RMI National Strategic Plan, Vision 2018 (2003–2018).

This TEM project has enabled the establishment of a “legitimate” platform for discussions on the issue, using SWM as an example. As the land managers, the alaps have been recognized as having a critical role to play in SWM on Majuro, where indiscriminate disposal of solid waste to land and sea has been occurring for decades; the alaps have now prepared their own SWM action plan and are looking to form an association to better promote their role in environmental management overall.

The TEM project represents only a very small, albeit vital, step in solving the solid waste problems on Majuro. Traditional knowledge must be maintained, in programs such as the Canoes of the Marshalls, if the importation of alternative products is to be minimized. Traditional practices, such as the mulching and composting of organic materials, must be encouraged in order to reduce the amount of waste requiring disposal to landfill and to enhance the fertility of the soils. This will in turn allow the growing of fruit and vegetables locally. Traditional values must also be revived to ensure that a collaborative approach to solving the many SWM issues is adopted.

TEM will not, on its own, solve the problems of solid waste on Majuro. However, any solution will only come about with the active cooperation and leadership of the traditional leaders. Many SWM issues TEM cannot address. Linkages with other SWM projects are therefore essential if progress in SWM is to be maintained.

CASE 5. Mainstreaming Environmental Considerations and Traditional Knowledge and Practices into Policies and Programs for the Mele Catchment Area in Vanuatu

Background

As part of its preparation of a Pacific Region Environmental Strategy for 2005-2009, the Asian Development Bank commissioned a case study whose objective was to describe efforts in Vanuatu to mainstream environmental awareness, legislation, international undertakings, and traditional knowledge and practices into overall economic and development planning and policies. It attempts to achieve these objectives through a situation analysis of the Tagabe River Catchment Area on Efate Island, Vanuatu, identifying particular constraints and opportunities for integrated decision making and community development.

Current Status of Planning and Resource Use Management in Vanuatu

The study analyzes the various acts, institutions and policymaking bodies at the national, provincial, and local level that affect development planning and resource use management in Vanuatu. These include the following

Traditional Governance. Customary practices shape social, cultural and political life in Vanuatu, most importantly those practices relating to land and its uses. A National Council of Chiefs, consisting of customary chiefs elected by their peers, advises on all matters relating to custom and tradition.

National Institutional and Legislative Regulation of the Environment. The single most important piece of legislation on environmental regulation is the Environmental Management and Conservation (EMC) Act, which entered into force in March 2003. Its major provisions create a Department of the Environment (DoE), stipulate that all projects or development activities that may impact on the environment must comply with this Act, and empower the Director of the DoE to intervene in the development process whether a project has been referred to the DoE or not and to call for an environmental impact assessment (EIA) for any project deemed likely to

impact the environment. The EMC also calls for development of national policies and priorities to safeguard the natural resources of Vanuatu, heretofore lacking. The Act lacks some legislative and enforcement powers, however.

The Comprehensive Reform Programme (CRP) of 1997 guides national policy development and covers public sector, economic, and equity/social development reforms. While some improvements have occurred as a result of the CRP, the process has not produced tangible results for most people and support is dwindling.

Since 1996, a Medium-Term Development Framework has guided sector policy development. It gathers input from all sectors through consultations and the National Summit, then feeds it into the CRP Matrix to reflect priorities and provide a logical framework for determining policies and strategies. The CRP Matrix formalizes policies that encourage the mainstreaming of traditional knowledge into the government decision-making process and the policy framework.

All land in Vanuatu belongs to the indigenous customary owners and their descendants. As much as 80% of rural land is held under customary ownership. The rules of custom govern all decisions about tenure and ownership. Land cannot be sold, only leased for up to 75 years. The formal leasing process is effective and standard agricultural leases require the preservation, protection, and nonpollution of the land.

Nonetheless landownership disputes are considered a major barrier to economic development, because vast tracts of land remain undeveloped while court cases attempt to settle disputes. The Customary Land Tribunal (CLT) Act of 2001 awards jurisdiction over landownership disputes to a tribunal of customary chiefs applying custom and traditional practice to adjudicate local land matters. While the CLT is regarded as an important instance of mainstreaming customs and traditions, no decisions by such a tribunal have yet been reported and in fact, most CLTs have yet to be set up.

The land in cities like Port Vila, the capital, is considered public land; it can be leased for commercial or residential development, usually for 50 years. Uncertainty over ownership rights also deters long-term leasing of urban land.

A Water Resources Management Act has been passed but has not yet come into force. It will provide for the creation of water protection zones to conserve and protect significant water resources, especially in the Port Vila area.

Vanuatu signed and ratified the Convention on Biological Diversity and has carried out a National Biodiversity Strategy and Action Plan (NBSAP) project (1997–1999) to produce a national biodiversity conservation strategy. Among its objectives is participation of local communities in the management of biodiversity. The objectives and priorities were to be integrated into the planning and development process through the CRP, which provides the policy platform, and the EMC Act, which guides the development. Following on the NBSAP, a national scientific research council, one of its priorities, was being created. Information was being gathered for an environmental registry, which will include community conservation areas. These will form part of a database used to fulfill reporting requirements for the CBD and for development of national environmental strategies and plans as required by the EMC Act. The level of commitment Vanuatu has shown to implementing the CBD is commendable.

Provincial and Local Government. At present Vanuatu is divided into six provinces, which were to develop regional growth centers and develop rural areas. Local government councils (LGCs), which are highly autonomous entities, comprise elected and appointed members and can set out development policies and draw up regulations governing protection zones, such as natural parks and preserves. The Shefa LGC has jurisdiction over part of the Tagabe River catchment area.

Rural economic development initiatives (REDIs) for the six provinces of Vanuatu are designed to promote rural development, by providing key stakeholders with support for business development, protecting and promoting cultural practices and traditions, and focusing government and external assistance funds on rural development. Reflecting Vanuatu's great cultural diversity, however, they allow each province to take its own path and are formulated through a strong "bottom-up" community consultation process. Their administration is expected to improve linkages between communities and provincial and national governments.

Under the Physical Planning Act of 1986, physical planning units (PPUs) within the Department of Provincial

Affairs provide planning guidance and advice to province-based planners, LGCs, and municipal councils. Physical planning areas establish planning control boundaries. While establishment of policy for PPU's was provided for in the Act, none has so far been prepared, and no regulatory power ensures that provincial or municipal authorities comply with the PPU's advice.

Planning activities within Shefa province, which are carried out by a Planning Office and Committee and a Physical Planning Officer, have not so far included creation of a PPA for the province. While the committee is empowered to draw on all available technical advice from the PPU and any other relevant government department, such as the DoE, the committee has usually called for only minimal technical input, thus severely constraining the decision-making process. Shefa's revenue generation base is skewed heavily toward funds from development-oriented permits, thus the Physical Planning Committee has a strong inclination to approve development proposals in order to maintain or increase the revenue base. The advent of the EMC will strongly affect Shefa's development planning and approval process, as it requires EIAs for many kinds of projects that may have environmental impacts.

The municipal planning process is similar to that of the provinces. The EMC Act and its EIA mandate will require the Municipal Council to assess any future development proposals more rigorously for environmental impacts. An extensive EIA awareness and education campaign will be required to upgrade the capacity of both municipal and provincial councils.

Port Vila is running out of available land. The close proximity of the airport, the presence of Water Protection Zones (WPZs) to the north and east, and prime agricultural lands to the north are physical constraints. The city has no development management strategy or policy in place, but the importance of establishing an integrated growth management strategy cannot be overemphasized, especially to address the critical issue of pollution of Port Vila harbor and lagoon by unmanaged domestic and commercial sanitation systems.

Power and Communications. Effective policy and planning processes that aim to mainstream environmental and traditional knowledge require up-to-date and accurate data to work with. The Vanuatu Resource Information System is the most extensive information

system providing natural resource data coming from various departments including Forestry, Lands, Geology and Mines, Fisheries, Statistics, Environment Unit, Vanuatu Cultural Centre (VCC), and Public Works. But collection of natural resource data and its dissemination within the Government is highly fractured and does not appear to have a high priority with in many departments and agencies.

Electric power in Port Vila, managed by UNELCO, uses a diesel-powered generator and a diesel-fired power station. Electricity charges, which are US\$0.22/kWh, result largely from the cost of imported diesel fuel. There is little alternative.

Vanuatu's telecommunications system is a land based domestic and analogue mobile phone and microwave link to some rural areas, and an international satellite link. Television coverage is restricted to Efate. The service provider has a monopoly on Internet services and charges US\$88 per month for 40 hours' access plus telephone charges at US\$5.80 per hour. The high cost of power and telecommunications constrains dissemination of information throughout Vanuatu and restricts much environmental information (and all other kinds) due to limited communications budgets within government and limited funds at the community level.

Cultural Frameworks. The VCC is the principal national institution responsible for "the preservation, protection and development of various aspects of the rich cultural heritage of Vanuatu." The Vanuatu Cultural and Historical Sites Survey (VCHSS) handles much traditional environmental management (TEM) research and documentation. The VCC provides cultural research reports to the relevant ministries and government departments. It provides an ideal vertical linkage between TEM and policymaking, but no formal policy linkages have been set up between the VCC and the Department of Economic and Social Development (DESD), which is responsible for development planning, and no direct policy or administrative linkages connect the VCC and the CRP process.

Tagabe River Catchment Area: Prospects and Problems

Physical Description. The Tagabe River catchment area is a 25-km² subcatchment located about 15 km west of Port Vila city. It has relatively thick soils along the coastline that grade to deeper alluvial soils farther from the coast

and in the upper reaches, consists of silty clays and raised limestone and volcanic deposits. The catchment area consists mainly of rural land; a small portion is in the Port Vila municipal area. Its administration is divided between the city and Shefa province.

Land use. Land use in the catchment is highly diversified. At the lower end near Mele Bay a high-density squatter area sits amid agricultural land. Two kilometers inland, industrial use predominates: a paint factory, a brewery, and a power plant are located amid smaller factories and workshops. Further up the catchment are the Bauerfield International Airport, small agricultural holdings, and another squatter settlement. The middle reaches are dominated by pasture grazing, with some subsistence agriculture and forest, while the upper reaches are predominantly forest.

Land use has been changing rapidly recently, as the lower and middle reaches have been absorbed by the urban population of Port Vila. The rural reaches are under traditional customary ownership and is mostly leased for grazing by the granting of occupational rights without a lease agreement.

While Vanuatu's population growth rate is declining, growth is likely to continue for another 20 years. This, combined with the pressures of migration from outer islands, places great stress on urban housing. Immigrants have squatted mainly within the Tagabe River area, paying a nominal rent to the customary landowners but getting no essential services, such as water, sanitation, or waste management, in return.

Port Vila's lack of planning is shown in lack of setbacks from the high water mark or property boundaries, the poorly designed sanitation and drainage system, and the lack of green spaces and parks. The city's infrastructure is inadequate to the present population; any expansion into surrounding lands will lead to increased environmental and health problems.

Port Vila's Urban Growth Management Strategy (UGMS) includes an option for expansion into the Tagabe River catchment area. This would mean displacing farms from prime agricultural land close to Port Vila market; landowners are loath to see their land turned into urban housing. Moreover, small-scale agriculture is needed to feed Port Vila's growing population.

Agriculture and tourism have been identified as the main economic drivers for Shefa: food production for Port Vila (the area's agriculture is dominated by cattle raising by large [predominantly foreign] plantation holders) and proximity to the international airport are considerations. In addition, Shefa's REDI recommends reforestation in parts of the Tagabe River area. Tourism outside Port Vila is limited by the absence of the necessary infrastructure, i.e., roads and tourist facilities. The challenges for Shefa's planning process will be to manage the pressures so as to reflect the aspirations of all stakeholders, incorporate environmental considerations at all stages, and to make use to the extent possible of TEM and customs the stakeholders represent.

Port Vila Water Supply. Squatters' informal gardens have encroached on the water extraction zone, and the easing of land in the zone has raised the issue of fertilizer and chemical use. River users report occasional visible contamination. Enforcement is all but nonexistent.

The increasing numbers and size of squatter settlements subject the zone to potential contamination. Water quality monitoring has detected no bacteriological contamination, but water samples taken during the 1997 drought, when levels were low, showed fecal coliform counts that indicated bacterial input from adjacent surface areas.

Residents of Port Vila's suburban squatter colonies come from various islands of the Vanuatu archipelago. They don't own or even legally lease the land they live on. Identifying TEM practice in such areas is difficult. Land rights disputes complicate ownership and water access issues. TEM can be described as common sense compounded with current circumstances.

All the industries present in the commercial and industrial zone of the Tagabe River catchment are supplied by the Port Vila municipal system. Wastewater from production is typically treated before disposal but some companies have complained about poor drainage in the area and inadequate water treatment by the local brewery, which creates unpleasant odors.

Three water protection zones (WPZs) have been proposed for the Tagabe River catchment area, covering 26.85 km². They allow for increasingly restricted use relative to their distance from the municipal area.

Water resource protection is a key issue for the Tagabe River catchment area. The biggest problem is present and future squatter contamination. Managing the informal population in the area has failed, due to political influence, poor enforcement, and ignorance due to failed communications about what the possible outcomes are of inappropriate urban development in a water resource area. The Tagabe River Catchment Management Initiative (TRCMI) aims to bring key stakeholders together to better manage the Tagabe River area. This is a key component of TRCMI.

Waste Management. Responsibility for waste management in the catchment area is divided between the Port Vila township and the Shefa provincial government. Within the municipality, waste collection and deposit in a landfill is provided by the municipal council for a fee. In the provincial area, Shefa provides no service, so residents can dispose of their waste at the landfill for a fee, or compost, burn, or bury it closer by. These methods are not managing the volume of waste, so the municipal council provides periodic bulk collection. Even so, the inappropriate disposal threatens the quality of surface and groundwater in the WPZs.

Sociocultural Pressures. The presence of so many squatters from different customary areas of Vanuatu, on land under traditional management practice by people not their kin or neighbors, has meant little identification with the land or development of any sense of community or stake in what happens there. This has led to continued expansion of unmanaged land use and increased threats to the resources they are compromising.

Cultural Heritage Sites in the Tagabe River Area. In Vanuatu, taboo sites play an important role in resource conservation, as they typically restrict access or use. The VCHSS has identified two sites in one of the Tagabe River area WPZs; the other two WPZs have yet to be surveyed. An additional site is claimed by all surrounding villages. Because of the diversity of the Tagabe area residents' cultural groupings, consultation processes on cultural aspects will have to be more extensive to reach both traditional landowners and whatever community groups exist in the squatter area and to ensure that all are heard from.

The Tagabe River Catchment Management Initiative. As concern mounted among those providing water supply and service for Port Vila about the possible compromise

of the water bores in the Tagabe River catchment area, a multisector study group was set up by the DoE to assess water problems. When a wider range of issues was revealed in meetings, the TRCMI was established to outline existing issues, take them to the communities in the area, and review actions to take. By engaging the community in partnership with the private and public sector, the TRCMI provides opportunities for stakeholders within the catchment, especially those previously unfranchised, to raise concerns and propose solutions for the coordination and management of the water resource.

The TRCMI replaces the provincial and municipal management agencies, whose inputs were localized and selective, with a multistakeholder group to plan for management and use of the catchment area and integrate environment and community inputs into the process. A Tagabe River Catchment Management Plan is now in preparation, will involve local communities, utilize processes and outcomes of the Shefa provincial REDI, highlight social and economic interactions with the environment, and eventually serve as a model for other such management plans. Initial actions by the TRCMI include identification of existing land leases and establishment of a consultation process with communities that adjoin the WPZs.

Frameworks for Integrating and Implementing Environmental and Community Planning

New Principles, Aims and Objectives. The EMC Act has set Vanuatu in a new direction in environmental planning and management: by establishing the TRCMI the DoE has recognized that catchment or watershed management has the potential to deliver the environmental management and economic development outcomes that Vanuatu needs to achieve its stated goals. Since local communities hold natural resources in customary ownership, any management model must involve local communities. The TRCMI model highlights community participation in the decision-making process and a collaborative management approach.

The catchment management process creates a framework for addressing resource management issues and developing community-based economic outputs and benefits. Since the Tagabe River area falls partly in Shefa province, the provincial REDI will be instrumental in providing development guidelines for the area, which will

have to be in accord with the aims of the WPZs, such as an ecopark or reforestation area.

Integrating Environmental Planning and Management Law. The EMC has commenced a process that will improve environmental planning outcomes for Vanuatu. Specifically, it calls for EIA as a component of the development approval process and will require local/municipal governments to assess environmental and social impacts of development. Gaining compliance with the Act's requirements will take extensive awareness and education for all government departments and local councils. Meanwhile, it is a first step toward integrating community development and environmental management into the planning and development process. The National Policies and Plans provided for under the EMC Act will focus on integrated planning and strategies and structures that support it under the CRP and Physical Planning Act, or other new regulations.

Linking Cross-Sector Policy, Plans, and Actions. The CRP has embarked on a forward-thinking process of public sector reform that incorporates aspects of environmental management and traditional and customary knowledge into the economic reform and decision-making process and aims to streamline decision making, promote transparency within government, and encourage economic growth. As outlined in the CRP Matrix, the nationally based CRP consultation process has developed an overarching policy framework that provides for environmental conservation within an economic growth framework and promotes the incorporation of community input into the decision-making process.

Instituting Participation throughout the Development Process. An important component of EIA is the establishment of a public participation process that specifies the preparation and publication of a public notice by the development proponent allowing for public submissions. The inclusion of a public submission process within EIA allows for broader community input into the decision-making process and ensures that the concerns of the community can be formally presented for review and consideration.

Capacity Building for Integrated Environmental and Community Planning. Extensive capacity building is required at the national and provincial level to create and strengthen administrative and legislative measures that will see the incorporation of environmental and traditional practices into the decision-making process.

Recommendations

- **Policy Development.** Efforts should be made to open up conduits for community appraisal and the early injection of traditional environmental management and knowledge to each level of governance/decision making.
- **Strategic Economic Planning.** In order to ensure that environmental considerations are included at this level of planning, and that community and traditional knowledge inputs are included in decisions and review process, DESD should receive capacity building in the assessment of environmental and social impacts of development proposals and in mechanisms for including community involvement.
- **Physical Planning.** The regulatory relationship between the national and provincial/municipal planning and environment offices should be strengthened through the development of an

integrated strategic planning structure that specifically allows for inputs of community and traditional knowledge at all levels of decision making. A road map should be provided for the development of an integrated strategic physical and economic planning process for the longer term, including an integrative legislative framework, administrative process, and policy linkages involving community partnership. The Port Vila UGMS and Sanitation Master Plan (both of which depend on the successful institution of an integrated strategic planning structure), should be implemented.

- **Tagabe River Catchment Management Initiative.** The Government and community should, over time, incorporate the successful process and products from the TRCMI, its Coordinating Committee, and its Catchment Management Plan, within an integrated environmental planning system.

Appendix 3

HUMAN DEVELOPMENT-CHARACTERISTICS OF PDMCS

Table A3.1: Demographic Characteristics of PDMCs

Country	Land Area (km ²)	Last Census	Total Population (at last census)	Mid-Year Population Estimate	Projected Annual Population Growth Rate (%) 2000	Population Density (people/km ²)	Projected Population Doubling 2000	Average Household Size 2000
Cook Islands	236	1996	19,103	17,900	-0.5	76	–	4.4
Timor-Leste	14,874		884,000	–	–	–	–	–
Fiji Islands	18,272	1996	775,077	945,000	1.6	45	45	5.3
Kiribati	726	1995	77,658	112,400	2.5	112	28	6.5
Marshall Islands	181	1999	50,840	63,200	2.0	286	35	7.8
Micronesia, Fed. States of	702	1994	105,506	141,900	1.9	168	36	6.8
Nauru	21	1992	9,919	13,700	1.8	545	39	10
Papua New Guinea	462,840	1990	4,790,800	5,873,600	2.3	10	30	5.7
Samoa	2,857	1991	161,298	179,100	0.6	58	110	7.5
Solomon Islands	29,785	1986	285,176	620,500	3.4	16	20	6.6
Tonga	747	1996	97,784	104,100	0.6	154	117	6.0
Tuvalu	26	1991	9,043	10,600	0.9	381	82	6.2
Vanuatu	12,200	1999	193,219	267,600	3.0	16	23	5.6

– = not available.

Source: SPC 2002. *Demographic/Population Programme*. Noumea: SPC; and SOPAC 2002. *Sustainable Development Strategy*. Suva: SOPAC.

Table A3.2: Additional Social Indicators of PDMCs

Country	Infant Mortality Rate (per 1,000 live births) (2001)	Male Life Expectancy at Birth (2001)	Female Life Expectancy at Birth (2001)	Age Dependency Ratio (%) (2000)	Population with Access to Improved Water Source (%) (2001)	Daily per Capita Calorie Supply (cal) (1999)	Net Enrolment Ratio in Primary Education (%) (1995–2001)	Adult Literacy Rate (%) (2000)
Cook Islands	19	71	74	82	100	–	98	99
Timor-Leste	–	–	–	–	–	–	–	–
Fiji Islands	18	67	71	55	47	2,934	99	93
Kiribati	51	59	65	68	48	2,982	71	77
Marshall Islands	54	64	67	82	82	–	100	97
Micronesia, Fed. States of	20	66	70	71	44	–	–	71
Nauru	25	57	65	85	100	–	98	95
Papua New Guinea	70	56	58	72	42	2,186	84	76
Samoa	20	66	73	70	99	–	97	80
Solomon Islands	20	67	70	85	71	2,222	–	64
Tonga	17	69	73	72	100	–	95	99
Tuvalu	38	64	70	72	100	–	100	98
Vanuatu	34	67	70	76	88	2,766	96	64

– = not available.

Source: ADB, 2003d. *Basic Statistics, Developing Member Countries*. Manila: ADB; and ADB, 2001b. *Basic Statistics, Developing Member Countries*. Manila: ADB.

Table A3.3: Economic Indicators of PDMCs

Country	Year	GDP (US\$M)	GDP per capita (US\$)	GDP (%)	Annual Real Growth Rates (2001)			Shares of GDP (2001)	
					Agriculture (%)	Industry (%)	Services (%)	Agriculture (%)	Industry (%)
Cook Islands	CY 2001	77	5,524	-3.3	-24.0	-0.8	0.4	11.9	8.1
Timor-Leste	-	-	334	-	-	-	-	-	-
Fiji Islands	CY 2001	1,445	1,777	4.3	1.7	7.4	3.6	16.3	26.6
Kiribati	CY 2001	44	511	1.5	(2000) 7.9	(2000) -32.4	(2000) 2.1	(2000) 14.6	(2000) 6.0
Marshall Islands	CY 2001	102	1,946	2.1	4.2	0.8	0.7	13.8	16.0
Micronesia, Fed. States of	CY 2001	230	2145	1.1	-	-	-	-	-
Nauru	CY 1996	59	4,715	-	-	-	-	-	-
Papua New Guinea	CY 2001	2,993	687	-3.4	-5.4	-3.3	1.9	31.3	35.0
Samoa	CY 2001	245	1,406	6.5	-4.6	11.0	8.4	17.3	24.9
Solomon Islands	CY 2001	213	490	-10.1	-11.0	-24.1	-5.6	32.4	7.2
Tonga	CY 2001	142	1,407	0.5	-6.3	2.3	3.4	28.0	15.0
Tuvalu	CY 2001	13	1,251	4.0	-	-	-	-	-
Vanuatu	CY 2001	234	1,186	-2.7	0.5	0.4	3.3	17.9	9.2

- = not available.

Source: SOPAC, 2002. *Sustainable Development Strategy*. Suva: SOPAC; and ADB, 2001. *Basic Statistics, Developing Member Countries*. Manila: ADB.

Appendix 4

Table A4.1: High Priority Areas for Action Relating to Forest and Tree Management

Subject	Priority Area	Regional Importance
Policy and Legislation	National forest (and land use) policies and legislation (formulation, implementation, and monitoring)	High
Forest Management	Sustainable forest/tree; land use and management practices, e.g., codes for harvesting, "best practices," etc.	Very high
	Forest regeneration (natural and artificial) and silviculture systems	High
	More active involvement of and equitable distribution of benefits to all stakeholders	Very high
	Forest certification systems	Medium
	Quantification and "mainstreaming" (i.e. user-pays) of vital services provided by forests and trees [e.g. soil, and water protection, carbon sequestration, essential nontimber forest products (NTFPs)]	High
	Capacity building and technical and other support	Very high
Forest/Tree Products Utilization	Improved utilization (reduced wastage) and downstream processing of timber and NTFPs (e.g., nuts, fruits, medicinal plants, sandalwood, rattan, bamboo, <i>Morinda citrifolia</i>), especially of lesser-used species	Very high
	Improved marketing and markets for timber and NTFPs (including lesser-used species)	Very high
	Appropriate/new technology [e.g., mobile sawmills, wood ovens/stoves, improved uses of (renewable) wood energy]	High
	Capacity building and technical and other support	High
Forest/Tree Development	Natural regeneration of timber and NTFPs	Very high
	Artificial regeneration systems for timber and NTFPs (plantations, enrichment plantings)	High
	Appropriate/new technology (e.g., vegetative propagation, tissue culture)	High
	Capacity building and technical and other support	Very high
Watershed Management	Proper and coordinated land use practices in watersheds	Very high
	Community awareness and involvement	Very high
	Capacity building and technical and other support	High
Forests and Trees in Atoll Ecosystems	Quantification of role and impacts of forests and trees and improved awareness and community involvement	High
	Improved use and management of existing forest and tree resources (e.g., mangroves, coastal protection, home)	Very high
	Development of improved/new forests and tree resources (e.g., multi-purpose trees, bamboo)	High
	Capacity building and technical and other support	High
Regional Focal Point and Information Clearinghouse	Coordination and/or increased availability and use of national and aid provider resources for Pacific Island Countries and Territories (PIC/Ts)	Very high
	Provision of information clearinghouse on forest/trees to PICs/Ts and others	High

Source: Pacific Island Forum Secretariat. 2000. *Pacific Regional Submission to the 8th Session of the United Nations Commission on Sustainable Development on Integrated Planning and Management of Land Resources*. Suva: Pacific Island Forum Secretariat. Available: <http://www.forumsec.fj/Home.htm>.

Appendix 5

ADB'S ENVIRONMENT-RELATED ASSISTANCE TO PACIFIC DEVELOPING MEMBER COUNTRIES

Cook Islands

Since 1992, the Asian Development Bank (ADB) has implemented five environment-related technical assistance projects (TA) and three loans for Cook Islands.

Social Infrastructure. In the first half of the 1990s, ADB was active in the area of integrated urban infrastructure in Rarotonga (PPTA 2070-COO). Because of the economic and financial crisis faced by the Government in 1996, ADB deferred implementation of infrastructure investments, and assistance was focused instead on economic and fiscal reforms. In 1998, a project preparatory TA (PPTA) on urban infrastructure was approved and implemented (PPTA 3085-COO). This project aimed at assisting the Government in preparing to commercialize and encourage the private sector to invest in urban services like water supply, solid waste management, and construction of sewerage system. A significant output of this TA was a set of feasibility studies for solid waste management and water supply and sewerage projects.

These two TAs identified deficiencies in urban water supply and waste management as threats to the health of Cook Islanders as well as to its growing tourism industry. Subsequently, a loan of \$2.2 million on waste management was approved in 2001 (Loan 1832-COO) and is now being implemented. So far, this project has successfully established a recycling center in Rarotonga and has drafted a waste management strategy for the Island of Aitutaki. A standby loan on Water Supply and Sewerage is being considered for 2005 implementation.

Agriculture, Marine, and other Natural Resources. Two TAs were focused on coastal and marine resources management. In particular, ADB has been closely associated with helping establish the country's black pearl industry, but this necessitated careful attention to environmental controls. The advisory TA (AOTA) on lagoon ecology monitoring and management (AOTA 2144-COO) satisfactorily achieved its outputs of (i) undertaking a population dynamics and modeling study of black-lipped oysters in the lagoon area; (ii) measuring and recording water column parameters, regular plankton

sampling, examination, and identification of species; (iii) identifying and promoting environmentally sound pearl farming practices; (iv) establishing cooperation and liaison with other research agencies; (v) conducting on-the-job training of counterpart staff; and (vi) coordinating of lagoon ecological management activities, both by the government and the private sector. This TA has heightened pearl farmers' awareness of the need to manage the lagoons to ensure their long-term productivity. It also enhanced the farmers' knowledge of lagoon ecology and implications for protection of these fragile natural systems, although they are still tempted to push the carrying capacity of the Manihiki lagoon to the limit.

The TA on lagoon ecology monitoring and management was associated with a loan intended to develop a sustainable pearl industry in the country (Loan 1309-COO). Approved in 1994, the loan was implemented over a 4-year period and helped the Government establish the Cook Island Pearl Authority (CIPA). This body's function was to improve the efficiency and ecological stability of the pearl culture industry as well as to support private sector development by strengthening farmer associations, improving support services, and facilitating marketing. Unfortunately, not all of these targets were realized due to management problems. CIPA did not sufficiently gain the confidence of key private sector stakeholders in the pearl industry. In 1997, it was replaced by the Pearl Federation of Cook Islands as the main oversight agency, but problems remained, with competition preferred to cooperation. However, the project was able to bring international recognition to the black pearl industry because of the promotional activities, and this has significantly benefited the country's black pearl industry.

A related advisory TA (AOTA 2322-COO) implemented in 1996 was successful in establishing an in-house capability in operating and maintaining the pearl farm research and hatchery facilities, as well as in undertaking lagoon monitoring and management activities. The project also built the capacities of concerned government staff in designing pearl farm research trials, doing extension activities, and imparting environmental awareness to island communities.

Energy, Climate Change, and Variability. A study on outer islands power development (PPTA 2264-COO) was undertaken in 1995 and investigated an electrification, power system rehabilitation, and expansion program. Two major recommendations were developed: (i) to prepare a project to provide an additional generating plant for Rarotonga, and (ii) to develop necessary technical electricity improvements in all islands. Unfortunately, none of these recommendations have yet progressed into a loan. Some elements may be tackled under a proposed outer islands development project.

Disaster Response. After the onslaught of Cyclone Martin, ADB provided an emergency rehabilitation project (Loan 1588-COO) in 1997. The project was able to restore economic activity in the country and put up key social and physical infrastructure services in the Northern Islands. The project also enabled the pearl industry to resume normal operations without much economic dislocation.

Future Activities. In addition to these completed and ongoing TAs and lending activities, ADB has also scheduled the approval of the following advisory technical assistance projects for Cook Islands:

- i. AOTA 33375-01-COO: Capacity Building in Environmental Monitoring, Regulations and Community Participation, \$350,000; and
- ii. AOTA 35159-01-COO: Capacity Building in Island Councils, \$300,000.

Timor-Leste

By way of supporting the United Nations Transitional Administration in East Timor, ADB has authorized the implementation of six grants from the Trust Fund for East Timor (TFET). Three of these grants address associated environmental issues. In addition to these grants, Timor-Leste is also the recipient of three environment-related TA projects.

Institutional Strengthening and Capacity Building. Being a newly established country, Timor-Leste has limited technical capacity in enforcing environmental laws and regulations. In order to address this deficiency, ADB implemented an advisory project (AOTA 3501-ETM) in April 2001 to strengthen the capability of the Government's environmental agency to review, evaluate, and monitor the enforcement and implementation of

environmental management laws, regulations, and standards appropriate to East Timor. The TA was completed in October 2002 and has successfully attained its objective of developing and support the capacity of the Division of Environment national staff, particularly in carrying out environmental impact assessment, monitoring, and promoting sustainable development. This was achieved through training of local staff in environmental management, developing a plan for implementing an environmental management institution, reviewing the environmental and natural resource management regulations currently applied in Timor-Leste and recommending appropriate amendments, preparing an environmental profile, and identifying procedures for the development and use of environmental indicators in state-of-the-environment reporting.

Social Infrastructure. To hasten infrastructure development, ADB approved two grants on water supply and sanitation (Phases I and II) under TFET: the first (Grant 8185-ETM), for \$4.5 million, was approved on 31 July 2000, and the second (Grant 8189-ETM), of the same amount and nature, was approved on 31 December 2001.

The objective of the Phase I project (Grant No. 8185-ETM) was to provide the Timor-Leste people with sustainable water supply and sanitation (WS&S) services using appropriate technology and management. It restored damaged WS&S infrastructure and built the country's institutional capacity to manage and operate the system. A Project Management Unit was successfully established in September 2000 and the Program Implementation Document and Sector Management and Investment Framework were prepared and completed in December 2000. These are now being used as guidelines in implementing the overall rehabilitation activities being pursued in Phase II activities of the project.

The project also identified and implemented priority capacity and institutional development activities and laid the necessary groundwork for the physical rehabilitation and development assistance to the beneficiaries. The grant was closed in December 2001.

The Phase II project (Grant 8189-ETM) is basically a continuation of the activities outlined above. Its main targets are to (i) improve the capacity of water supply and sanitation services and (ii) assist in the implementation of priority projects in Dili districts, subdistricts, and villages in cooperation with other aid

provider countries. The project is now in full swing and is expected to be completed in April 2003.

The development of integrated water resources management (IWRM) was also deemed urgent to propel economic growth in East Timor. A fact-finding mission was sent to the country and resulted in the approval of another TA (AOTA 3986-ETM) on 15 November 2002. This TA aims to create a national water policy that will lead to the adoption and progressive implementation of IWRM in East Timor. This TA was to be implemented in early 2003.

Agriculture, Marine, and other Natural Resources. On 17 October 2001, ADB approved a grant worth \$1 million to finance the rehabilitation of the Hera Port fisheries facilities (Grant 8190-ETM) to contribute toward sustained food security for the East Timorese. A parallel goal was to achieve responsible fisheries management by promoting offshore pelagic fisheries, thus putting less pressure on inshore fisheries. So far, designs and construction work plans have been prepared and actual rehabilitation works are now in progress.

Energy, Climate Change, and Variability. Formulation of a long-term domestic energy sector development plan for Timor-Leste, to support sustainable economic growth and reduce poverty, was also deemed urgent. To address this, ADB also approved an advisory project (AOTA 3748-ETM) in October 2001 and tasked the project (Phase I) to (i) prepare a detailed and comprehensive technical survey of the energy sector in the country; (ii) determine a least-cost development strategy for the power sector; (iii) prepare a 20-year master plan for the sector based on a demand growth model; and (iv) prepare a technical and economic feasibility study for prioritized investment requirements. The TA is ongoing.

Future Activities. In addition to the above projects, ADB has also scheduled the approval of a preparatory project on Strengthening Infrastructure Development in East Timor (PPTA No. 35450-01-ETM) worth \$520,000.

Fiji Islands

Except for one TA for project preparation, all other environment-related TAs to the Fiji Islands over the past 10 years have been advisory in nature.

Institutional Strengthening and Capacity Building. In April 1993, the Government of the Fiji Islands adopted the

National Environmental Strategy (NES)—a broad-based program of action aimed to place the Fiji Islands firmly on a path to sustainable development. More specifically, the NES, which was prepared with ADB's assistance,¹ called for enhancing environmental awareness and education and informing the public of the benefits of environmental management and conservation. It also targeted elevating the capacity of the country's institutions mandated with environmental management and strengthening environmental legislation. Environmental management in the Fiji Islands has been highly sectoralized: line ministries are responsible for environmental management in their respective sectors. This has led to duplication of activities and inconsistent environmental policies across sectors. The need to consolidate authority for environmental management and policy-making was recognized with the establishment of the Department of Environment (DOE) under the Ministry of Housing, Urban Development and Environment in 1993. However, despite the establishment of this institutional framework, it soon became apparent that the newly founded Department of Environment would require significant institutional strengthening assistance to fill its legislated mandate. ADB responded with another advisory TA (AOTA 2180-FIJ) with the objectives of strengthening the institutional capability of the Department of Environment, helping prepare comprehensive environmental legislation, and developing an environmental information system.

The TA was successful in enhancing environmental awareness in the Fiji Islands, through its environmental awareness component as well as through the public consultations that emanated from the preparation of a draft sustainable development bill. It was also successful in strengthening the DOE and in establishing a national environmental database. However, given the technical limitations of DOE staff in managing the computerized database, the department is not able to operate the system without continuing external assistance.

ADB also has assisted the government to speed up the mapping procedure employed by the Native Land Trust Board (NLTB). Through implementation of a related TA (AOTA 3424-FIJ), a marked improvement has taken place in surveying and mapping capacity at NLTB. This has contributed to greater certainty in leasing land in the private sector.

¹ ADB. 1990. Technical Assistance for the Strengthening of Environmental Management Capabilities in PDMCs Manila.

Social Infrastructure. Aside from institutional strengthening, ADB also assisted the Fiji Islands to improve the water supply and sewerage system for the Suva-Nausori area of Viti Levu Island. A TA project (PPTA 3055-FIJ) was implemented to prepare a master plan for the development of water supply and sewerage services, as well as to formulate an investment project for ADB financing. As a result, a further advisory TA on Capacity Building in Water and Sewerage Services and an accompanying loan for the Suva-Nausori Water Supply and Sewerage Project were being prepared, for expected approval and implementation in 2003.

An advisory Urban Sector Strategy Study TA (AOTA 3243-FIJ) suffered major delays in implementation because of political unrest and the change in government. Officials of the new administration requested a change in the TA scope, which ADB approved as follows:

- i. To consolidate the previously planned separate outputs of a national urban policy action plan, i.e., finance plan, low-income settlement plan, and proposals for improving selected actions of local governments, into a single integrated output: a national urban policy action plan.
- ii. To introduce two new outputs, comprising preparation of (a) a structure plan for Suva-Nausori-Navua and (b) a district plan for the Suva-Nausori-Navua foreshore.
- iii. To initiate work on a low-income settlement plan through preparation of the structure plan for the Suva-Nausori-Navua region, where the problems of low-income settlements are most severe.
- iv. To limit work on local government strengthening under this TA to an identification of urgent action needs, particularly those relevant to the Suva-Nausori-Navua region, with further work to occur under a second TA.
- v. To limit the work on local government and physical planning legislation to identification of the need for change, with further work to occur under other sources of funding.

It is worth noting that no explicit attention appears to have been given to environmental issues, *per se*, in the TA. While aspects of urban environmental services provision are covered, there is little emphasis given to understanding and establishing the basis for overall improvements in the urban environmental quality and health.

Agriculture, Marine, and other Natural Resources. The forestry and agriculture sectors are of high priority. Apart from current work in restructuring the sugar industry, ADB previously has provided support to the forestry sector. In particular, AOTA 1848-FIJ was implemented to activate and strengthen the Forestry Economics Unit (FEU) of the Forestry Department to enable it to conduct high priority studies on the proper utilization of the country's forest resources. This TA was generally successful, but strong organization and logistical support at the FEU are yet to fully materialize. Forestry issues related to mahogany plantations have become highly politically charged.

Future Activities. To further assist the Fiji Islands Government in its social infrastructure and other urban development projects, ADB has identified several TAs and loans that are scheduled for approval and, hopefully, implementation in 2003–2005. It must be noted that some of these TAs/loans have already been mentioned above:

- i. PPTA 33478-01-FIJ: Community-Based Tourism Development, \$500,000;
- ii. AOTA 32200-02-FIJ: Capacity Building in Water and Sewerage Services (piggybacked to Loan 32200-01), \$652,000;
- iii. Loan 32200-01: Suva-Nausori Water Supply and Sewerage Project, \$35.5 million;
- iv. PPTA 36164-01-FIJ: Outer Island Small Infrastructure Development, \$600,000, schedule of approval still to be arranged;
- v. Loan 35487-01-FIJ: Rural Electrification Development, \$10.0 million;
- vi. Loan 33478-01-FIJ: Community-Based Tourism Development, \$10.0 million; and
- vii. Loan 36164-01-FIJ: Outer Island Small Infrastructure Development, \$30 million.

Kiribati

Six TAs and one loan were identified as environment-related in Kiribati.

Institutional Strengthening and Capacity Building. The fragile nature of Kiribati's ecosystem has been increasingly threatened by the encroachment of a cash economy, rapid pollution growth, and uneven concentration of development in urban centers. With ADB assistance, Kiribati prepared a National Environment

Management Strategy (NEMS)², which identified a number of priority areas and formulated an action program to stop the unsustainable use of natural resources, rehabilitate the environment, and improve the quality of life of the local people. Four major issues related to environmental management were identified in the NEMS, namely (i) weak institutional capacity; (ii) disregard the of negative environmental impact of new developments; (iii) unmanaged solid waste disposal; and (iv) destructive coastal erosion, sedimentation, and depletion of mangroves in coastal zones.

In response to this, an advisory TA (AOTA 2199-KIR) was carried out principally to strengthen the capability of the Environment Unit in undertaking environmental impact assessment (EIA) and environmental data management. The TA has provided a comprehensive assessment of the state of Kiribati's environment, giving particular attention to the country's economic development and its impact on the environment; population growth and declining health conditions; the physical, and biological condition of the coastal areas; existing solid waste management practices; and current EIA practices. From this assessment, action programs were recommended and some investment needs were identified. Overall, the TA was only partly successful because of the serious difficulties encountered in fielding a cohesive consulting team and dealing with a lack of back-up support and the lack of available counterpart staff from the government agency that were supposed to receive the necessary training programs.

Social Infrastructure. Population increases in South Tarawa have posed a serious health hazard, particularly in the heavily populated urban centers of Bairiki, Betio, and Bikennibeu. This led to the implementation of a preparatory TA (PPTA 2497-KIR) on Sanitation and Public Health aimed at establishing a prioritized program of improvements in water supply, sewage disposal, and solid waste management. The major output of the PPTA was a 15-year master plan that served as the springboard for the development and subsequent implementation in 1999 of a loan (Loan 1648-KIR) on Sanitation, Public Health and Environment Improvement worth \$10.2 million. Prior to the actual implementation of various development activities proposed in PPTA 2497-KIR, an initial environmental examination was undertaken from October

to December 1996 under AOTA 2641-KIR (Environmental Improvement for Sanitation and Public Health). Measures were recommended to mitigate possible environmental impacts of these development activities.

Two advisory TAs were piggybacked to Loan 1648-KIR. The first (AOTA 3108-KIR) was designed to strengthen the Public Utilities Board (PUB), which is supposed to be the institutional base responsible for sustainable development of water sanitation and services in the country. The second (AOTA 3109-KIR) aimed to strengthen the participation, awareness, and understanding of the local community in order to promote water conservation. These advisory TAs and the loan were simultaneously approved in 8 December 1998 and they commenced implementation in May 1999.

As a result of the implementation of the above projects, restructuring of the PUB and strengthening of its management staff was recommended, together with the promotion of community participation. The PUB Act and its scheduled amendments were approved. Likewise, an Environment Act was passed in 1999. Other physical activities like civil works, protection of water reserves, procurement of supplies and materials, land acquisition/reservation, recycling, a public health education and public awareness campaign, and installation of a new power generating station, are now ongoing.

As a follow-up to an earlier TA on community development and participation initiatives (AOTA 3109-KIR), another advisory TA (AOTA 3838-KIR) was approved in March 2002. This TA aims to improve the well-being, health, and environment of the people of South Tarawa. The TA also intends to introduce safer water and waste handling practices for the majority of communities of South Tarawa through self-help initiatives established in government agencies, schools, NGOs, and the private sector. Relevant activities to achieve the above objectives are now underway, such as (i) training of local communities, teachers, students, and staff of concerned agencies; (ii) development and testing of appropriate technologies for rainwater storage and water purification; (iii) solid waste management; and (iv) provision of necessary institutional mechanisms.

Future Activities. In summary, ADB's future technical assistance for Kiribati is listed below:

- i. AOTA 32567-03-KIR: Outer Islands Development

² ADB. 1990. Regional Technical Assistance for the Strengthening of Environmental Management Capabilities in PDMCS. Manila.

- Program Implementation (to be piggybacked to Loan 32567-01), \$300,000;
- ii. AOTA 35491-01-KIR: Mariculture Development Strategy, \$250,000;
- iii. Loan 32567-01-KIR: Outer Islands Development Program, \$8.0 million;
- iv. AOTA 35065-01-KIR: National Water Resources Assessment, \$400,000; and
- v. AOTA 33295-01-KIR: Strengthening O&M Capacity of PUB, \$350,000.

Republic of the Marshall Islands

ADB has provided eight TAs and three loans to the Republic of the Marshall Islands (RMI).

Institutional Strengthening and Capacity Building. The RMI Environmental Protection Authority (RMIEPA) was created in 1994 and mandated to preserve and improve the quality of the environment in the country. Despite its achievements as a regulatory agency, it was nevertheless confronted by several problems that required the strengthening of its staff capability. In 1992, the Marshall Islands requested ADB's assistance to address these needs and as a result, an advisory TA (AOTA 1826-RMI) was approved in December. This TA focused on five areas: (i) strengthening the RMIEPA's education unit, (ii) expanding the Water Quality Monitoring Program, (iii) establishing a coastal zone management program, (iv) developing standard EIA procedures, and (v) strengthening capabilities of environmental institutions in management and enforcement of regulatory measures. The TA has provided substantial training to EPA staff, particularly on collecting water samples, doing water quality measurement, and monitoring the shorelines. It has developed manuals for longterm monitoring of coral reefs, lagoons, and the beach environment and has provided recommendations to effectively manage the coastal areas of the Marshall Islands. Complementary to this, another advisory TA (AOTA 2065-RMI) was approved on 23 February 1994, which aimed to strengthen RMIEPA capability in delivering nonformal education and extension programs to target groups not covered by formal education. The TA included training in producing nonformal environmental education materials and the subsequent conduct of awareness and advocacy workshops in the Marshall Islands' major island groups.

Social Infrastructure. Following the severe drought that hit the country in December 1991 and in April 1992, the

supply of freshwater in Majuro was almost depleted. A loan program (Loan 1389-RMI) was approved in 1995 and assisted the Government in preparing detailed engineering designs to improve water supply facilities for the entire Majuro atoll. The loan was instrumental in the installation of new pumps with required water pressure; reduction of sewage overflows and leakage that enhanced water conservation; and prevention of pilferage of water facilities. This loan was piggybacked by an advisory TA (AOTA 1946-RMI) purposely to strengthen the Majuro Water Sewer Company (MWSC). The strengthening process suffered some setbacks however, because of constant changes in the management structure of the company. MWSC has neglected the package of policy and institutional reforms that is an essential component of the project. The TA came up with several recommendations to improve the financial and management aspects of MWSC.

An ongoing loan (Loan 1694-RMI) on health and infrastructure in Ebeye is moving quite well. It has completed the construction of the target hospital and even provided it with necessary equipment. It has also completed the rehabilitation of the sewerage system and upgrading of the sewer facilities, where sludge pumps are already fully operational. Additionally, it has provided an adequate supply of potable water and improved the overall access to it. The power distribution system has also been completed under the project, thus improving the overall capacity, efficiency, and reliability of power generation and distribution.

Agriculture, Marine, and other Natural Resources. An advisory TA (AOTA 2349-RMI) that prepared the National Fisheries Development Plan (NFDP) was generally successful and resulted in the submission of useful reports on the required process of transforming a typical government institution, the Marshall Islands Marine Resource Authority (MIMRA), into a self-funding agency. The plan contained recommendations on policy and development initiatives affecting the coastal fishery, the oceanic fishery, and institutional arrangements. Some of these recommendations were implemented prior to completion of the TA. In view of the results achieved, the Government asked ADB for another assistance to implement the remaining recommendations. An advisory TA on fisheries management (AOTA No. 2854-RMI) was thus approved and implemented to continue the implementation as laid down in the NFDP. This TA was a success in meeting its objective of building the capability of MIMRA. But the sustainability of the changes

introduced, particularly on environmental policies and in the MIMRA itself, remained a question.

Meantime, a related advisory TA (AOTA 3522-RMI) on community-based coastal marine resources development whose objective was to facilitate the establishment of appropriate mechanisms and implementing guidelines for a revolving trust fund, and subsequent development of small-scale marine resources management projects for outer island communities, was terminated after a market research concluded that no economically viable small-scale marine resource-based activities exist in the Marshall Islands that could be funded under the trust fund.

Energy, Climate Change, and Variability. A reliable power supply was necessary for RMI to spur its economic development. In Ebeye Island, in particular, the Kwajalein Atoll Joint Utility Resources (KAJUR) needed assistance to prepare a feasibility study for an investment project to expand its power generation capacity and distribution system, rehabilitate the existing generating plant and distribution system, and help in reconditioning its water desalination plant. In 1995, a power development study (PPTA 2415-RMI) was implemented to address this need.

Although this TA made feasible recommendations on the financial, accounting and collection aspects of KAJUR's operations, its impact was limited because most of the recommendations were never put in place. KAJUR remained unable to collect its bills and constrained by financial limitations even to undertake regular maintenance of its facilities. The TA also recommended that KAJUR maintain good relationships with its clientele, yet despite this, limited efforts were exerted, thus resulting in limited public support and political commitment.

Other Sectors. With the main goal of developing the tourism industry in the country, an advisory TA (AOTA 2483-RMI) was implemented to provide assistance to the Marshall Islands Visitors Authority (MIVA) to become the focal point for local and overseas tourism marketing efforts. The main activities of the TA focused on (i) institutional strengthening of MIVA as the country's national tourism organization, including the establishment of procedures for handling inquiries from tour operators and visitors and preparation of a business plan; (ii) conducting market research to identify key tourist generating markets and networks with tour operators and travel agents; and (iii) outlining the main components of a preliminary tourism development strategy for RMI. The TA

successfully established an independent statutory body out of MIVA, but this still requires some assistance to develop its capacity fully. Meanwhile, the Business Plan (1997-1998) produced for MIVA as well as the market potential study on tourism, were all helpful in providing direction to MIVA's operation.

Future Activities

- i. PPTA 34212-RMI: Outer Island Basic Social Services, \$400,000;
- ii. Loan 34212-RMI: Outer Island Basic Social Services, \$6.0 million; and
- iii. AOTA 36366-01-RMI: Support for Tourism II, \$250,000.

Federated States of Micronesia

ADB has provided five TAs and two loans to the Federated States of Micronesia (FSM).

Social Infrastructure. Improvement of the water supply and sewerage system was identified as a priority undertaking in four States, namely: Pohnpei, Chuuk, Yap, and Kosrae. Related master plans were prepared for the purpose through a UNDP assistance project, but it was still deemed essential to undertake another project that would review the master plans and determine what specific rehabilitation, refurbishment, and expansion of supply were necessary to bring the systems to an acceptable level of service. In August 1994, ADB approved a preparatory TA (PPTA 2137-FSM) for this purpose and commissioned a consulting firm to undertake the study. The TA was successful in designing a water supply system for each State that included an implementation plan and disbursement schedules. The TA also recommended action programs to strengthen the capacity of the institutions that were to handle the water distribution system in the four States.

As a result, a project (Loan 1459-FSM) undertook the installation of distribution pipelines, drilling of water wells, refurbishment of water treatment plants, construction of new pumping stations and water tanks, and procurement of vehicles, tools, and equipment.

This loan was piggy-backed by an advisory TA (AOTA 2646-FSM), which provided assistance to the Utility Corporations in the four States in developing their expertise in operations and maintenance of water supply and

sewerage systems. The TA also improved the management information, billing, and accounting systems of the utility corporations, as well as in undertaking public education and participation programs.

Agriculture, Marine, and other Natural Resources. As early as 1992, the National Environmental Strategy, which was framed with ADB assistance, indicated that the spread of settlements and expansion of agricultural activity into forested areas were causing significant environmental problems in the watersheds of Pohnpei. This has a negative impact on plant and animal habitats, water conservation, land erosion, sediment levels in rivers and streams, and pollution of coastal waters. While a Watershed Forest Reserve and Mangrove Protection Act was passed in 1987, it did not adequately address public interest in the land, hence, an advisory TA (AOTA 1925-FSM) was formulated to catalyze public consultation and participation. The principal objective of the TA was to assist the Pohnpei State Government in improving the watershed environment through a participatory approach.

A community participatory approach was found effective, particularly when handled by competent practitioners. However, such an approach must be balanced by stimulation of political leaders and Government planners to instill in them an equal sense of project “ownership,” and to ensure that the impetus to foster a community participatory approach is sustained when external assistance is withdrawn.

The Marine Resources Management and Conservation TA (AOTA 1965-FSM, piggybacked to Loan 1257-FSM), which aimed to assist the Government and the private sector in developing a national commercial fishing industry, was not that successful. The TA, however, was instrumental in drafting the Model State Fisheries Law that will serve as the cornerstone upon which any future management of the exploitation of the inshore marine resources will be based.

In late 1996, the Government requested ADB’s assistance (AOTA No. 2832-FSM) to further capacitate and reform the policy in the fisheries sector, particularly the Micronesian Fisheries Authority (formerly Micronesian Maritime Authority). This TA served as a logical follow-up to the Fisheries Summit, where a recommendation to encourage private sector investment in fisheries and consolidating commercial fisheries management under one authority was made.

Future Activities. ADB has no environment-related TAs or loans scheduled for FSM for 2003–2005.

Papua New Guinea

Among the different developing member countries (DMCs) in the Pacific, Papua New Guinea had the largest number of TAs and loans from ADB.

Social Infrastructure. As early as 1992, Papua New Guinea was granted a loan (Loan 1211-PNG) to improve its urban water supply. The project’s main objective was to improve the living conditions of communities in Madang, Rabaul, Kokopo, and Takubar by providing them with safe drinking water. Despite delays encountered in the initial stage of implementation, the necessary physical activities related to the installation of water supply facilities were successfully carried out.

A preparatory TA (PPTA 3173-PNG) on Provincial Towns Water Supply and Sanitation implemented in 1999 paved the way for an ongoing loan (Loan 1812-PNG) whose objectives are to (i) increase the coverage and improve the quality of delivery of water supply and sanitation services, and (ii) build further the capacity of the Papua New Guinea Waterboard. Target activities of the project are still to be implemented, such as (1) the construction/upgrading of the surface and groundwater intakes and treatment facilities, (2) installation of new sewerage networks and a wastewater treatment and effluent disposal system, (3) implementation of recommended policy and institutional changes, and (4) building the capacity of the Waterboard. This loan has an add-on grant of \$1.7 million from the Japan Fund for Poverty Reduction to implement a Low-Cost Sanitation, Community Awareness, and Health Education program. Except for the preparatory workshops held in two sites, major components of the projects have yet to be implemented.

Agriculture, Marine, and other Natural Resources. Two advisory TAs (AOTA 1990-PNG and AOTA 2022-PNG), both approved in 1993, were able to strengthen the capability of two government agencies in Papua New Guinea, i.e., the Department of Environment and Conservation (DEC) and the Department of Fisheries and Marine Resources (DFMR), in fulfilling their respective roles in the Government’s fisheries development plan.

AOTA 1990-PNG in particular provided the DEC with skills and technical knowledge in preparing, reviewing, and administering initial environmental examinations and EIAs for investment projects, and in monitoring key environmental parameters that are significant for the conservation and protection of marine and coastal resources. The public information component of the TA, including a video (“Look After Our Future”) proved to be an excellent tool in putting across the environmental message to its target clientele. The TA outlined the legal basis for Coastal Zone Management (CZM) in Papua New Guinea and should be established using the Conservation Areas Act. Amending legislation to the Environmental Planning Act was likewise suggested. Through this legal basis, the TA also provided strategy for achieving CZM, whose essential feature is to establish coastal zones as planning areas corresponding to the coastal provincial boundaries. The strategy should be directed towards multiple sustainable use of the resources and only in exceptional cases to create protected areas. The TA also suggested various institution-building measures in support of CZM, i.e., in training, administration, and public awareness.

With regard to AOTA 2022-PNG, Institutional Strengthening of the Department of Fisheries and Marine Resources, the TA concentrated on two main aspects: (i) building into the organization a capacity to facilitate viable and sustainable fisheries development through the development of skills in project preparation and appraisal; and (ii) provision of assistance in vision setting, planning, and the development of structures and processes for achieving the institutional and industry goals and targets. The TA made significant gains on all the three critical elements of institution-building, i.e., (i) setting the objectives, targets, goals, etc.; (ii) devising strategies and plans; and (iii) developing a core of motivated and skilled people at DFMR to make the plans and strategies happen. One lesson learned from the TA was that community-based fisheries projects should not be supported or implemented if the institutional setting is weak, as social dimensions normally make it difficult to formulate successful projects.

A fisheries management preparatory TA (PPTA 2258-PNG) approved in 1994 (and later supplemented in 1996) developed a loan proposal whose main objective was to increase the economic contribution by the fisheries industry to the PNG economy on a sustainable basis. The proposed project had two broad programs, Commercial

Fisheries Production and Fisheries Management Capacity-Building. This project (Loan 1656-PNG) progressed quite well, particularly the policy development component. Some delays were experienced in the implementation of the action plan and infrastructure components, however. For instance, construction of wharf in Port Moresby was dropped and was to be transferred to Lombrum in Manus. Meanwhile, the wharf planned for Madang was relocated to Kavieng. The project was able to complete all its target activities and on 9 August 2002, the loan was formally closed.

The need to prepare a project for the sustainable management and development of the coastal fisheries sector was still seen as a priority. Thus, another preparatory TA (PPTA No. 3604-PNG) was implemented to address this need and at the same time to promote opportunities for small-scale coastal fishers and dwellers to engage in income-generating activities. The TA came up with a project proposal with two main components: (i) capacity building, which would involve strengthening the capabilities of provincial fisheries departments, improving the organization of fishery stakeholders, and promoting co-management of marine resources; and (ii) Infrastructure, where infrastructure needed to promote development and investment by the private sector would be provided in order also to improve the efficiency and effectiveness of small-scale fishing operations.

In the agriculture sector, Papua New Guinea availed itself of a Smallholder Agricultural Support Services Pilot Project (Loan 1652-PNG). The project aimed to increase production, productivity, and income of smallholder households in the Eastern Highlands and Morobe provinces in a sustainable manner and to enhance the status of women in agriculture. So far, the results of the project have been highly encouraging. Good evidence showed that focused, output-based funding mechanisms developed under the project provided significant impact and benefits to smallholder farmers.

Future Activities. ADB has put in the pipeline the following projects for Papua New Guinea:

- i. Loan 34121-01-PNG: Community Water Transport Project, \$18.3 million;
- ii. PPTA 34130-01: Rural Water and Sanitation, \$300,000;
- iii. PPTA 36371-01-PNG: Coastal Area Management, \$600,000;

- iv. Loan 34129-01-PNG: Agriculture/Rural Development, \$21.0 million;
- v. PPTA 36371-02-PNG: Coastal Area Management (Piggybacked to Loan 36371-01), \$400,000; and
- vi. Loan 36371-01-PNG: Coastal Area Management, \$15 million.

Samoa

Samoa has so far had six TAs and one loan that can be considered environment-related. These have been dominated by both the technical and institutional aspects of environmental and energy infrastructure.

Social Infrastructure. As recognized in the National Environmental Management Strategies (NEMS) and more recent studies, improving urban services is urgently needed. Economic growth will continue to encourage rapid urbanization. Improved urban planning and carefully controlled urban development is required if the degradation of the urban environment is not to reach serious levels. Several policy issues need to be addressed, such as improving coordination of planning for the provision of urban development and services, selecting appropriate and affordable levels of service, and implementing demand management measures, as well as cost recovery. Technical assistance provided by ADB along this line has included PPTA 2480-SAM on integrated urban development (which did not result in a loan but continued to be helpful in preparing a sanitation and drainage project due for Board Consideration in 2003); and AOTA 3044-SAM on sewage treatment options.

Samoa continues to experience economic growth that is stimulating urban in-migration, particularly to Apia. To address this issue, an advisory TA (AOTA 3566-SAM) was implemented in 2001, and was able to achieve a consensus on an urban management institutional framework that reflects the cultural and institutional needs of the country. As a result, a new integrated urban planning and management system is now being implemented. At the heart of this new system, the Government agreed to set up a new Planning and Urban Management Agency (PUMA) with a high-level Planning and Urban Management Board to provide leadership in policymaking and implementation of urban development.

As a new agency, PUMA still needs some capacity strengthening. Thus another advisory TA (AOTA 3860-

SAM) was implemented to help improve the economic, social, and physical environment of Apia through the institutional development and strengthening of PUMA. During the first phase of its implementation, the TA was able to continue work on the feasibility study for a sanitation and drainage project, prepare a planning and policy framework for Apia, and also prepare extension materials for the community to enhance their awareness about the environment.

Energy, Climate Change, and Variability. In 1993, a supplementary loan (Loan 1228-SAM) was given to Samoa for its Afulilo Hydroelectric Power project. It was successful in displacing total dependence on diesel-based power supply generators and even helped the Government in developing alternative and indigenous sources of energy. Inspired by this development, an advisory TA (AOTA 3808-SAM) on Strengthening Energy Loss Reduction and Maintenance Capacity of the Electric Power Corporation was approved in December 2001. In late 2002, a Savai'i Renewable Energy Project (PPTA 3985-SAM) was likewise approved. This TA was intended to establish a least-cost power development plan for the island of Savai'i. One of the objectives of this TA was to identify and carry out a feasibility study on small-scale hydro projects suitable for ADB financing.

Future Activities

- i. PPTA 28314-02-SAM: Capacity Building in Sewerage Management (piggybacked to Loan 28314-01-SAM), \$400,000;
- ii. Loan 28314-01-SAM: Sanitation and Drainage Management, \$7.0 million;
- iii. AOTA 35132-02: Savaii Hydro Power Support (Piggybacked to Loan 35132-01-SAM), \$400,000; and
- iv. Loan 35132-01-SAM: Savaii Hydro Power Support Project, \$10.0 million.

Solomon Islands

Solomon Islands has only two environment related PPTAs, i.e., on fisheries management and development, and a complementary TA on marine biodiversity conservation funded by the Global Environment Facility (GEF). While these two TAs were intended to develop loan packages for ADB's approval in 2000, neither has yet progressed that far.

Agriculture, Marine, and other Natural Resources. The Government of Solomon Islands asked ADB for a TA (PPTA 3237-SOL) to prepare a fisheries management and development loan. The TA was able to deliver a project proposal with an overall goal of ensuring that the fisheries sector contributes to sustainable economic growth in the country, with equitable distribution of benefits. The project's main focus was to be on the commercial tuna fishery, particularly the development of further investment in shore processing. This project is intended to lead to further foreign investment through the provision of essential infrastructure and a more supportive policy environment. The project will have four components: policy development and institutional strengthening of the Division of Fisheries, construction of a fisheries wharf and bulk fuel storage facility as part of a major port development proposed for Bina harbor; construction of a research hatchery for black pearl culture, and development of community resource management and conservation at selected sites through GEF support.

Another preparatory TA (PPTA 3277-SOL) on marine biodiversity conservation, aimed at (i) strengthening conservation of coral reef ecosystems and discouraging destructive fishing practices, particularly those associated with the live reef fish trade; and (ii) establish marine protected areas, was likewise implemented.

Future Activities. It is important to note that Solomon Islands has acquired no environment-related loans from ADB. ADB has scheduled a loan for the country that hopes to propel rural improvement (Loan 32544-01: Rural Infrastructure and Services) worth \$8.0 million.

Tonga

As regards environmentally-related assistance, Tonga has been the recipient of only one TA and one loan:

Agriculture, Marine, and other Natural Resources. The Outer Islands Agricultural Development Project (Loan 1412-TON) was prepared to assist the Government of Tonga in its efforts to achieve sustainable economic growth with a more equitable distribution of income, as set out in its Sixth Development Plan, 1991–1995. The Government had accorded high priority to the development of the agriculture sector and to the development on the outer islands. The islands selected for the project area were 'Eua, a small island close to the capital Nuku'alofa, and the islands of Niuatoputapu and

Niuafo'ou (the Niuas) which are small, isolated islands at the extreme north of Tonga's territory.

The Project has four components: (i) capacity strengthening in the Ministry of Agriculture and Forestry (MAF) to provide extension services to the outer islands, (ii) farming systems improvement through research and development with the aim of increasing productivity and sustainability, (iii) market support and development through marketing facilities and services, and (iv) infrastructure improvements including the construction of agricultural roads, telecommunications on the Niuas, tanks and piping for domestic water supplies, and quarantine facilities.

The strong response of the beneficiaries to the opportunities created by the project indicates that Tongan farmers, regardless of location, are economically motivated and will respond to attractive commercial opportunities. Moreover, the fact that the beneficiaries' choice of enterprises was altered in response to changed market conditions indicates that they are market driven and, given the necessary information, will respond rationally. The design of the project was aimed at improving the commercial and technical environment in which farmers operate rather than promoting a prescriptive mix of enterprises, which allowed them to respond to changes within the project framework. The strengthening of MAF, undertaken through AOTA 2467-TON, has resulted in a more effective organization, better able to serve the farmers of Tonga. However, the restructuring took much longer than anticipated, even with liberal provision of foreign technical assistance.

Future Activities

- i. PPTA 33096-01-TON: Agriculture Sector Development, \$500,000;
- ii. Loan 33096-01-TON: Agriculture Sector Development Loan, \$5.0 million; and
- iii. AOTA 32200-02-FIJ: Capacity Building in Water and Sewerage Services (piggybacked to Loan 32200-01), \$652,000.

Tuvalu

Tuvalu has only two environment-related advisory TAs.

Social Infrastructure. Land scarcity and increasing population density have caused serious problems in

Funafuti, especially in land management, housing and water supply, sanitation and waste management, and pollution control. Living standards have seriously deteriorated, and the urban planning functions are fragmented among ministries and departments. To ease population pressure on Funafuti, some government departments and functions are being moved to the larger island of Vaitupu, 130 km north of the capital. A land-use plan for both atolls was needed to address problems of unplanned and uncontrolled development and environmental deterioration. An advisory TA (AOTA 2319-TUV) on urban planning and environment management was implemented.

This TA was instrumental in the preparation of urban plans for Funafuti and Vaitupu, the definition of environmental infrastructure improvement projects, and recommendations for improvements to the land administration and valuation system, along with complimentary institutional development and implementation proposals. A potential ADB project was also defined.

Agriculture, Marine, and other Natural Resources.

Tuvalu's greatest hope for economic development depends on its ability to exploit its ocean resources. In particular, there is a need to develop commercial fishing in the country. Under an ADB TA (AOTA 1992-TUV), a study was undertaken in 1994 to evaluate existing constraints to, opportunities for, and further development of fisheries activities in Tuvalu, especially commercial, export-oriented enterprises. As a result, the TA was able to formulate project options that were favorably received by both the Government and the local community representatives. In brief, the proposed projects will focus on (i) a tuna purse seine operation, with an estimated cost of \$10 million and an annual operating margin of \$3 million and (ii) a seamount fishing operation for production of snapper and other high-valued bottomfish species, with an estimated cost of \$1.125 million and an annual operating margin of about \$350,000.

Future Activities

ADB has programmed an advisory TA on energy for Tuvalu (AOTA 36526-01-TUV: Future Electricity Supply for Funafuti) worth \$100,000.

Vanuatu

Vanuatu has had three environment-related TAs from ADB:

Social Infrastructure. The high population growth, rapid urbanization, escalating demand for urban services and increasing levels of population and environmental degradation indicated the need for urgent and concerted action to prepare and implement urban development strategies for Port Vila and Luganville. The strategies should enable the Government to plan for and manage urban growth, improve the quality and quantity of service delivery, and protect the environment, particularly the groundwater resources and the coastal marine waters, while facilitating sustainable use of these important natural resources. There was also a need to strengthen the Government's institutional capability to provide, operate, manage and maintain urban infrastructure and facilities.

A preparatory TA (PPTA 1952-VAN) designed to prepare Vanuatu for urban growth and development in 1993 fulfilled its target of formulating urban strategy and urban structure plans for Port Vila and Luganville and the identification of the sectors and components that would form the basis of an investment package. Necessary IEE was likewise prepared for recommended investment projects that progressed into the implementation of a project on Urban Infrastructure in 1996 (Loan 1448-VAN). This project was piggy-backed by two advisory TAs that tackled growth management of Port Vila (AOTA 2596-VAN and AOTA 2597-VAN).

AOTA 2596-VAN focused on an analysis of the major parameters and policies that governed future economic and social development in urban centers. Among these parameters were role of tourism for the economy, government policies for internal population migration, and ecological and environmental constraints. The TA has also completed drafting the Environment Acts, Water Resource Management Act, and the Building Act. This draft legislation has been reviewed and is now undergoing revisions and finalization. AOTA 2597-VAN, on the other hand, contributed significantly in assisting the Government in preparing a 20-year sanitation master plan for Port Vila.

Future Activities

- i. AOTA 35218-01-VAN: Capacity Building for Agriculture Sector Development, \$400,000;
- ii. PPTA 36406-01-VAN: Preparation of an Agriculture Project, \$300,000;
- iii. AOTA 36409-01-VAN: Capacity Building for Environmental Management, \$200,000; and
- iv. PPTA 33164-01-VAN: Preparation of an Urban Sanitation and Public Health Project, \$200,000.

Regional

ADB implemented 19 environment-related regional TAs (RETAs) in the region; others are ongoing. They are grouped according to the five major sectors:

Institutional Strengthening and Capacity Building. Of the seven RETAs categorized under this sector, six are designed to directly strengthen the institutional capability of Pacific developing member countries concerned in the implementation of environment-related projects and/or in the performance of mandates of the agencies concerned. Although one is about the promotion of traditional environmental management practices, it is also basically capacity building in nature.

With the objective of developing mechanisms to mobilize existing and additional investment funds for sustainable development of ADB developing member countries (DMCs), RETA 5491-REG: Regional Study of Financing Mechanisms for DMC Environmental Programs and Projects, was implemented. To this end, a number of commissioned papers have been prepared that shed light on various financing issues. The RETA concluded that policy reform is central to reduce financing requirements that normally obstruct the smooth flow of projects' implementation, and this applies not only to member countries but also to international organizations like ADB.

The project (RETA 5542-REG) that investigated environmental indicators and indexes was successful in providing new insights on how international financing institutions and policy and planning officials of concerned DMCs can measure environmental performance in the region. A related TA (RETA 5555-REG) was likewise successful in laying the foundation for the development and collection of environment statistics in 11 participating PDMCs. Important environmental statistics are now available for the use of participating countries and ADB.

But in order to sustain the updating and collection of these statistics, training is still necessary to continuously develop expertise. It is also important to have coordinated efforts among international organizations to develop a common set of environmental indicators for the region (handbooks and manuals included) to avoid duplication of work.

ADB also financed the conduct of a ministerial level conference on environment and development and the preparation of a state of the environment report (RETA 5585-REG). While this was successful in its objectives, preparation of the SoE report was rather slow because of the long consultation process among its implementing agencies and participating countries. In 1998, ADB sponsored a related undertaking, the Mayors' Asia-Pacific Environmental Summit (RETA 5816-REG).

ADB carried out another successful TA (RETA 5658-REG) in the area of environmental law through a partnership with The World Conservation Union (IUCN), University of Singapore, and the United Nations Environment Programme (UNEP). Legal practitioners and law students in the Asia and Pacific DMCs were trained on various aspects of environmental law enforcement. The RETA published a two-volume compilation of relevant materials on environmental laws.

With regard to environmental awareness, assistance (RETA 5913-REG) in the promotion of traditional environmental management (TEM) practices is now being implemented in three countries: Cook Islands, Marshall Islands, and Vanuatu. This RETA aims to (i) incorporate TEM into existing formal and nonformal education programs and disseminate it to decision-makers, government personnel, NGOs, and the general community; (ii) promote the role of traditional leaders in environmental management; (iii) strengthen the regional information network for the transfer of knowledge and skills using standard information transfer systems and Internet-based technologies; and (iv) assessment of NEMS in the three project sites.

The TA was supposed to be executed over an 18-month period, commencing in May 2000, but implementation commenced only in February 2001, due mainly to other commitments of the implementing agency and coordinators at the country level. The TA is still ongoing and so far has accomplished only Objective No. 1, although the TEM materials produced are still in draft form. With regard to the promotion of the role of

traditional leaders, little was accomplished, except for the holding of consultation-workshops with concerned leaders. Strengthening of a regional information network and evaluation of NEMS are not accomplished at all. Wrapup of the RETA is underway, where a special case study on how traditional knowledge is mainstreamed in solid waste management is now being assessed.

Social Infrastructure. A project on poverty reduction and its relation to environmental improvement is now ongoing (RETA 5939-REG). Its objective is to improve the knowledge and information base for use by national and urban DMC governments to address urban environment and poverty nexus.

In terms of water, a big project (RETA No. 6031-REG) on water management in the Asia and Pacific region is now in full swing. Financed under the Cooperation Fund for the Water Sector, this \$4.0 million RETA has six components: promotion of public awareness; knowledge base and capacity building; pilot demonstrations; water partnerships; regional events and partnerships; and program coordination, monitoring and evaluation.

Some of the major accomplishments of the project are as follows:

- i. Launching of a comprehensive water awareness program for the Asia-Pacific region;
- ii. Conducting a comparative study of water in 21 cities in the Asia-Pacific region;
- iii. Another comparative study of small water providers in nine Asian cities;
- iv. Launching pilot demonstration activities in several countries;
- v. Holding a multistakeholders' dialogue to discuss ways to improve water services to urban poor;
- vi. Joining the Water Dome exhibition during the WSSD;
- vii. Holding several regional workshops in preparation for the 3rd World Water Forum;
- viii. Organizing ADB's first Water Week; and
- ix. Participating in and playing a key role during the 3rd World Water Forum in Kyoto, Japan.

Agriculture, Marine, and other Natural Resources. This sector comprised five RETAs: one on biodiversity conservation, two (one supplementary in nature) on status of forestry and forest industries, and another two on fisheries management.

Through a TA (RETA 5557-REG) financed by ADB in 1993, a regional conference on Asia-Pacific biodiversity conservation was held and was able to identify priority concerns, major issues, and constraints affecting biodiversity conservation and protection in the region. Included were the following:

- i. Recognition of the role of indigenous communities and respect for the knowledge of these communities;
- ii. The importance of multisector and integrated approaches to biodiversity conservation;
- iii. The increased need for financial and technical assistance, including identification of innovative and expeditious means of financing small-sized pilot-level biodiversity conservation projects;
- iv. The need for assistance in refining policies and drafting appropriate legislation in response to the Convention on Biological Diversity (CBD) and strengthening institutions to enhance their capacity; and
- v. The need for regular monitoring of CBD implementation in the Asia and Pacific region.

A follow-up RETA (5591-REG) on the status of forestry and forestry industries in the concerned DMCs in the Asia and Pacific region was implemented in 1994. This RETA was augmented by a supplementary RETA on a similar subject in 1997. Basically, the technical assistance updated the forestry statistical database in the region, documented trends and prospects for wood and nonwood products, initiated new forest policies, and devised a profile of each forestry and forest industries projects in the region.

The RETA (5815-REG) designed to develop an international agreement on the conservation and management of tuna resources in the Central and Western Pacific Ocean was successful in providing PDMCs with an understanding of the various management options that could be taken. The RETA was particularly successful in:

- i. making the countries aware that their own actions in managing their fisheries within the EEZs could have a significant influence on Convention Area management arrangement that may be adopted in the future;
- ii. identifying and expanding on issues of long-term benefits;

- iii. providing lessons from tuna management arrangements in other parts of the world; and
- iv. building consensus among the PDMCs on how to manage Tuna resources.

In the ensuing year, 1999, a related RETA (5896-REG) on Strengthening the Live Reef Fish Trade (LRFT) Management in Pacific DMCs was approved. This aimed to (i) strengthen the Secretariat of the Pacific Community to enable it to provide technical and policy advice to Pacific DMCs governments on sustainable management of the live reef fish trade; (ii) train field staff and middle management government staff, and strengthen regional cooperation; and (iii) engage local communities in live reef fish trade management planning and development as a sustainable local business opportunity.

So far, the TA has accomplished the following:

- i. Field assessments and baseline studies for Kiribati, Papua New Guinea, Fiji Islands, Vanuatu, Marshall Islands, and Tonga were carried out with active participation of local fisheries officials
- ii. Production of awareness materials and a best practice manual were prepared in close collaboration with the International Marinelife Alliance. Posters and identification cards had been printed.
- iii. A regional workshop to discuss a specific management plan was held in Suva in July 2002.
- iv. A publication on the live reef fish industry was being prepared.

Energy, Climate Change, and Variability. Three environment-related RETAs were implemented under this sector. The first RETA (5627-REG) supported the conduct of a regional workshop where discussions on the technical, economic, and institutional aspects of Photovoltaic (PV) technologies were held. The workshop also identified the role of bilateral agencies, multilateral institutions such as ADB and the World Bank, DMC governments, and manufacturing and trading firms, in promoting widespread use of PV technology. This regional workshop also provided an opportunity for DMC staff to discuss their country experiences with PV technology, and exchanged ideas for further application in their respective countries. Specific recommendations were made by the workshop participants for ADB's consideration, to wit:

- i. Support capacity building, training, and pre-investment studies for PV technology application through TAs among its DMCs;
- ii. Provide assistance to the power subsector to evaluate benefits and costs of solar home systems as an alternative to grid-based rural electrification;
- iii. Consider a flexible lending structure that would reduce the number of intermediaries;
- iv. Consider establishing a renewable energy fund with concessional interest rate of 2–3% accessible to all DMCs; and
- v. Design and implement renewable energy initiatives to increase the flow of funds through public sector development financial institutions or through private windows by setting up revolving capital investment funds in local private institutions for retailing of funds.

The second RETA (5883-REG) on Performance Benchmarking for Pacific Power and Utilities was implemented to assist in improving the delivery of electric power, water supply, and sanitation services in concerned Pacific DMCs through the establishment and adoption of appropriate operational, institutional, and financial performance evaluation criteria and benchmarks within utility organizations. It also aimed to develop appropriate regulatory, managerial, and technical guidelines through consultations with power and water utilities within the Pacific region. The RETA has accomplished the survey activities (Phase 1) and consultations with power and water supply utilities (Phase 2). Phase 3 activities, which included adoption of evaluation criteria, benchmarking, and preparation of action plans, are still ongoing.

The third RETA (6064-REG), specifically on climate change, has just been implemented by ADB through a fund provided by the Canadian Cooperation Fund for Climate Change (CLIMAP). The goal of CLIMAP is to ensure that Pacific DMCs are able to adapt to externally caused climate change. The main purpose is to mainstream climate change and variability adaptation through risk reduction, on a pilot basis, in development planning and management in selected Pacific DMCs and ADB operations. CLIMAP's expected outputs include

- i. reviewing completed and ongoing programs on climate variability and risk management, risk reduction, and climate change vulnerability and adaptation, with specific regard to relevance,

appropriateness, and applicability of adaptation through risk reduction;

- ii. mainstreaming adaptation through risk reduction into ADB project operations to better respond to country needs; and
- iii. at the country level, selection of two Pacific DMCs to undertake mainstreaming adaptation through risk reduction on a pilot basis, at a development planning, sector, and project level.

Other Sectors. Finally, a RETA (6039-REG) on the formulation of Pacific Region Environmental Strategy (PRES) is also ongoing. This project, co-financed by the New Zealand Government, aims to produce a strong and well-articulated regional environmental strategy that will review major environmental challenges in the region and clearly formulate the strategic objectives and activities for ADB's assistance for 2005-2009.

The RETA has already formulated a draft environmental strategy which was presented in consultation meetings in Fiji Islands and Marshall Islands to draw comments, feedbacks, reactions, views, suggestions and recommendations on how to further improve the strategy to make it more relevant to the Pacific region. A project web site was developed and posted at the ADB web to enhance the consultation process. Publication of the formulated environmental strategy and the accompanying case studies is underway.

Future Activities

- i. RETA 36259-01-REG: Renewable Energy and Energy Efficiency Program for the Pacific, \$450,000; and
- ii. RETA 36669-01-REG: Increasing Fisheries Revenue in the PDMCs, \$200,000.