Reducing the Risk of Disasters and Climate Variability in the Pacific Islands

REPUBLIC OF FIJI COUNTRY ASSESSMENT

GFDRR
GLOBAL FACILITY FOR DISASTER REDUCTION AND RECOVERY

THE WORLD BANK

SOPAC

Acronyms and Abbreviations

ADB	Asian Development Bank
AusAID	Australian Agency for International Development
CCA	Climate change adaptation
CHARM	Comprehensive Hazard and Risk Management
DRM	Disaster risk management
DRR	Disaster risk reduction
EU	European Union
FJ$	Fiji dollar
GDP	Gross domestic product
GEFPAS	Global Environment Facility Pacific Alliance for Sustainability
GEFPACC	Global Environment Facility Pacific Adaptation to Climate Change
GIS	Geographic Information System
GFDRR	Global Facility for Disaster Reduction and Recovery
HFA	Hyogo Framework for Action
ISDR	International Strategy for Disaster Reduction
NAP	National Action Plan (for DRM)
NAPA	National Adaptation Plan of Action (for CCA)
NDMO	National Disaster Management Office
NDMP	National Disaster Management Plan
NGO	Nongovernmental organization
NZAID	New Zealand Agency for International Development
P-HYCOS	Pacific Hydrological Cycle Observing System
PICCAP	Pacific Islands Climate Change Assistance Program
SEEDS	Sustainable Economic and Empowerment Development Strategy
SOPAC	Secretariat of the Pacific Islands Applied Geoscience Commission
UNDP	United Nations Development Program
UNFCCC	United Nations Framework Convention on Climate Change

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Introduction

The World Bank policy note, "Not If, But When" shows the Pacific island countries to be among the world's most vulnerable to natural disasters. Since 1950, natural disasters have directly affected more than 3.4 million people and led to more than 1,700 reported deaths in the Pacific Islands Region (excluding Papua New Guinea). In the 1990s alone, reported natural disasters cost the Region US$2.8 billion (in real 2004 value). The traditional approach of "wait and mitigate" is a far worse strategy than proactively managing risks.

The Hyogo Framework for Action (HFA) 2005-2015 lists the following 5 key priority areas for action:

(1) Ensure risk reduction is a national and a local priority with a strong institutional basis for implementation;
(2) Identify, assess, and monitor disaster risks and enhance early warning;
(3) Use knowledge, innovation, and education to build a culture of safety and resilience at all levels;
(4) Reduce underlying risk factors; and
(5) Strengthen disaster preparedness for effective response at all levels.

This assessment represents a stocktaking exercise to review the extent to which disaster risk reduction (DRR) and climate change adaptation (CCA) activities have progressed in Fiji. It also identifies the gaps or impediments to achieving the HFA principles, and proposes opportunities for future DRR/CCA investments that would be timely, cost-effective, and implementable within a three-year timeframe. The focus is on risk reduction, as opposed to post-disaster recovery and response. While some sector-specific activities are addressed in the assessment of national and local government policies and institutional arrangements, the Fiji report does not provide a comprehensive summary of sector-by-sector activities. Instead, it cites other reports that have covered this and complements these with suggestions for taking the necessary steps.

The assessment aims to deepen the understanding of the gaps, opportunities, and needs at the national level toward stronger operational disaster and climate risk management in Fiji and to link closely to other ongoing and future efforts by other donors and stakeholders (such as the SOPAC regional initiatives following the Madang Framework and the National Action Plans) to ensure synergy and avoid duplication. The assessment focuses on practical, proactive measures as ways in which Fiji can inform its national development policies and plans and strengthen its capacity to reduce the adverse consequence of natural hazards and climate change with regard to risk reduction. The linkage of these two areas mainly includes managing the impacts of extreme weather events, variability in precipitation and storm surges, and sea-level rise.

This Fiji assessment highlights the current country status; gaps, opportunities, and barriers related to (a) national policies, strategies, plans, and activities to manage natural hazards; (b) the enabling environment for a comprehensive risk management approach to natural hazards; and (c) the capacity to undertake such a comprehensive approach, including institutional arrangements, human resources, public awareness, information, and national budget allocations. It also reviews and identifies the need for informed policy choices, improved decisionmaking processes, strengthened regulations, and legislative and policy changes required to support proposed country-level activities.

With respect to achievement of the first (1) HFA priority action principle, there is clear evidence of systemic difficulties among many Pacific island countries in establishing an enabling environment and promoting a cross-sector focus for DRR and CCA activities. Since the available evidence shows that ad

hoc, externally driven approaches have not yet provided satisfactory results, the HFA emphasis upon a strong government commitment and action is one of the primary and early challenges to be surmounted in achieving the goals of the UN International Strategy for Disaster Reduction (ISDR).

World Bank experience in countries with similar challenges shows that while it is important to have a clear long-term vision given the institutional, financial, and resource constraints, more modest "bottom-up" approaches tend to have better results. Also, taking existing investment programs and incorporating simple key DRR/CCA elements demands relatively fewer efforts and resources and yields results that can lay the foundation for more complex, follow-up stages. Getting stakeholders to coordinate their activities in line with the 2005 Paris Declaration on Aid Effectiveness also appears relatively easier with such a modest starting point than with formal efforts aimed at comprehensive "top down" coordination.

This report begins by explaining the DRR/CCA-related context of the country. It follows with sections on key findings and a detailed country assessment that focuses on some relevant components to achievement of the HFA: adopting and mainstreaming policies; data and knowledge; risk and vulnerability assessments; monitoring and evaluation; awareness raising and capacity building; planning and budgetary processes; and coordination. From this assessment, possible opportunities for addressing the identified gaps and needs within the HFA are presented in the final section. Three proposals for investment support to Fiji are presented in Annex A.

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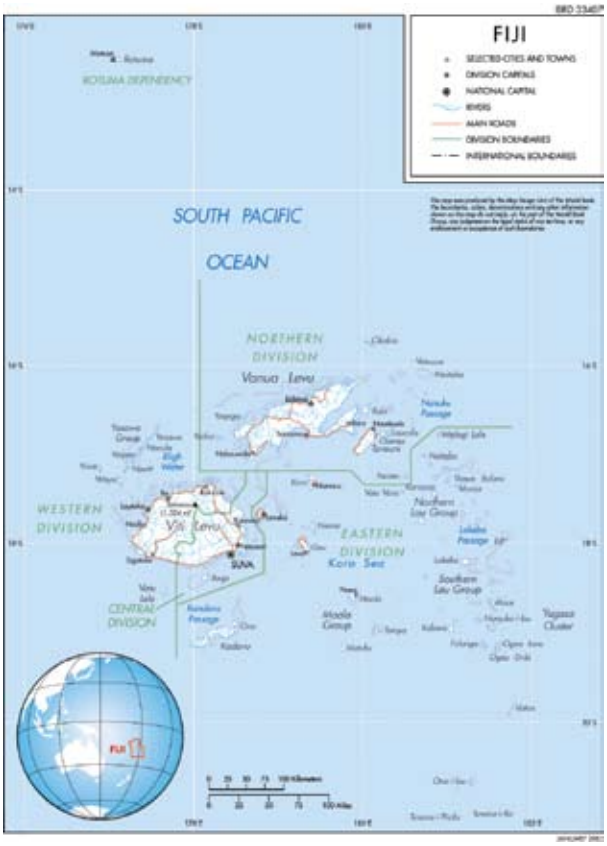
Country Context

The Republic of Fiji is an island nation with an estimated population of 850,000 people and an annual population growth of 0.8 percent. The country has a total land area of 18,333 square kilometers, and a much larger exclusive economic zone of 1.26 million square kilometers that encompasses over 320 islands of which 105 are inhabited (Figure 1). The inhabited islands are mostly volcanic in origin, including the largest—Viti Levu (10,390 square kilometers) and Vanua Levu (5,538 square kilometers). Together these islands make up about 87 percent of the nation's landmass.

Figure 1. **Map of Fiji**



Fiji is second only to Papua New Guinea as the Pacific island country having been most affected by natural disasters since 1990 (ADB 2005). The social and economic implications of climatological and hydrological risks are considerable across all primary production sectors, especially agriculture. Floods and droughts can disrupt agricultural production for domestic and export activities and landslips can cut roads and disrupt communications and access. Cyclonic events are a threat to settlements, infrastructure, tourist facilities, and the population that is located on the coastal fringe of the high islands and on the low islands.

Despite low population growth rate, pressure on land resources for increased food production is growing. According to the estimates of the Asian Development Bank (ADB 2005), about 30 percent available land is flatland suited to sustainable agricultural production.

Fiji has a diverse economy. Economic activities encompass agriculture, fisheries, forestry, garment manufacturing, and mining. Exports include sugar, clothing, gold, coconut products, tropical fruits, root crops, vegetables, tobacco, fish, and timber products. Tourism is the fastest growing industry in the country. Tourism contributes about 17 percent to GDP, while 3-4 percent draws from agricultural production, 4 percent from forestry, and 1-3 percent from the minerals sector. The nation's biodiversity resources, upon which many economic activities are dependent, represent over 40 percent of the country's GDP (ADB 2005). All of these economic sectors are at risk to adverse impacts from climatic variability and climate change.

Geographically characterized by high and low islands, Fiji is exposed to a wide range of geological, climatological, and hydrological hazard and risks. It has a tropical-oceanic climate with tempering influences of prevalent southeast trade winds producing a mean annual temperature of 28° Centigrade. Rainfall varies considerably, with the windward sides of larger islands being extremely wet while leeward sides have considerably less rainfall. For example, annual rainfall ranges from approximately 440 millimeters in the west and 1,120 millimeters in the southeast of the larger main is-

Table 1. Key Hazards to be Addressed by the Republic of Fiji

Key natural hazard	Key human-induced hazard
Flooding and droughts	Fire (dwellings and wild-fire in forest)
High cyclonic /storm winds	Oil and chemical spills
Storm surge and coastal inundation	Contamination of water supplies
Landslides	Disease outbreaks
Earthquakes	Slope instability due to over-clearing
Seabed volcanism	Contaminated storm run-off
Tsunami	Coastal siltation

lands. The combination of high rainfall accompanying cyclonic activity and storm events, as well as steep bare slopes, causes rapid runoff with river floods and sediment discharges into the nearshore coral reef habitats. It has adverse implications for coastal communities, as well as for commercial fishing and tourist activities.

Table 1 provides a summary of the key natural and human-induced hazards in Fiji. The current key hazards and risks of most concern to Fiji are products of cyclonic and geological-forcing activity. Fiji is in the tropical cyclone belt, and one cyclone on average passes through Fijian waters each year. Cyclones cause loss of lives and property, coastal and riverine flooding, as well as damages to agricultural and tree crops from high winds. They have severe consequences for the nation's economy. Reaping damages to the country at a cost of FJ$100 million, Cyclone Ami exemplified how poor building standards can result in large infrastructure losses and aggravate the human catastrophe (ADB 2005).

Other hazards of a priority nature include landslides on unstable slopes resulting from geological and soil conditions and excessive clearing of vegetation; and storm waves and swells, and rising sea level contributing to coastal erosion.

Fiji's location on the Pacific "ring of fire" puts it at risk from geological hazards, in particular earthquakes and locally generated tsunamis. The last major destructive earthquake and tsunami was registered in 1953. The threat from volcanic eruptions is rather low with their primary effects on the maritime sector limited to the impact of large pumice rafts from sub-marine eruptions to the east of Fiji.

The core natural hazards are weather and climate related. They are caused by tropical storms and cyclones that produce storm surge, flooding, and heavy seas. Drought, which affects coastal and upland areas, is another outcome of a climatic condition. Since 1978, several droughts have had a major impact on the economic productivity and subsistence livelihoods across the country. The threats can become significantly higher due to a longer-range climate change.

The Fiji Islands are characterized by physical, demographic and socio-economic conditions and pressures that exacerbate vulnerability and the risks posed by natural and human-induced hazards. The characteristics of Fiji include the following:

- ***Geographic extent*** of an island nation that covers a large area of ocean that makes communications and disaster response difficult;
- ***Topographic variability*** with low-lying coastal areas and atolls that are susceptible to overtopping by storm surge and the considerable areas of steep hills and mountains that are over-cleared, geologically unstable, and susceptible to landslips;

- ***Diverse and terrestrial and marine ecosystems*** that offer a diversity of habitats and ecosystem services, for example, related to mangroves and coral reefs that provide some coastal protection from storm waves and seas;
- ***Fresh-water resources*** that are highly vulnerable to over-use, contamination, and droughts;
- ***High-density population pockets*** in coastal areas of Viti Levu (for example of Suva), as well as the coral coast and low islands that have been developed for tourist resorts;
- ***Socio-economic disparity*** with a considerable part of the rural and low island populations at subsistence levels;
- ***Primary industry-based economy*** vulnerable to droughts, floods, and global market influences.

To address disaster risk reduction and disaster management, the Government of Fiji adopted the *Strategic Development Plan 2007-2011,* based in large part on the regional *Framework for Action 2005-2015.* In November 2007, the Interim Fiji Government promulgated the *Sustainable Economic and Empowerment Development Strategy (SEEDS) 2008-2010*, One key goal of the new policy strategy is to reduce vulnerability to disasters and risks, while promoting sustainable development. ❖

Key Country Findings

The key natural and human-induced hazards of major concern to Fiji require DRR/CCA measures that are tailored to the geographic characteristic and type of governance of the island nation. Key areas of concern for disaster risk reduction arise from Fiji's salient characteristics:

- ***Some coastal tourist developments are sited in vulnerable areas*** that make disaster risk management and liability in relation to early warning and evacuation more difficult.
- ***Settlement planning processes and building codes are needed*** to integrate risk reduction and adapting to climatic variability and change.
- ***Significant areas of the coral reef, beach and mangrove systems are degraded*** making coastal areas more vulnerable to storm surges and coastal erosion.
- ***Emergency response and relevant infrastructure, early warning mechanisms and community arrangements are limited*** with scattered islands particularly vulnerable to cyclones and droughts, with subsequent water and food shortages.
- ***Waste management and sanitation are inadequate,*** which increases the potential for the pollution of critical water sources and the general threat to public health, especially in coastal lowland areas utilized for tourist developments.
- ***Poor agricultural land use practices*** are one of the main causes of soil erosion, flooding, and siltation of nearshore coral reef habitats.

While relevant policies and regulations in Fiji are reasonably well structured, their implementation remains weak. This situation is compounded by a widely acknowledged lack of institutional capacity. The task at hand—reducing risks to human life and health, land-surface stability, terrestrial and marine biodiversity, socio-economic viability, and public and private property and infrastructure—deserves urgent attention to translating these objectives into effective, well-planned, and coordinated activities.

This assessment concludes that the climatological, hydrological, and geological pressures raise concerns about risk reduction when taking into account the cumulative effects of the risks from interactions between natural and human-induced hazards. The assessment findings can be summarized as follows:

- ***Fiji has an inherently high potential for exposure to considerable array of natural disasters.*** The probability for catastrophic damage and loss of life from hazards, such as cyclones and tropical storms, storm surge, flooding and landslips, is assessed as very high.
- ***Fiji is extremely vulnerable to natural and human-induced hazards.*** Overall, the associated risks appear to be increasing due to population pressures, poorly regulated land resources, and the potential for climate change.
- ***Human-induced hazards increase negative impacts from cyclonic and tropical storm events and geological (including seismic) activity.*** The impacts result from poorly planned and developed urban and peri-urban areas, vulnerable tourist facilities and infrastructure; unsustainable economic development processes and activities; and inadequately resourced disaster response mechanisms.
- ***Insufficient preparation for natural and human-induced hazards increases the underlying risks.*** While core hazards and risks have been identified and priority issues are known, they are not integrated into national and sector plans and policies. Furthermore, the ability to manage population growth in certain areas, land use, and protection of environment is severely undermined by institutional constraints, including professional and technical capacity of government agencies.

The situation is complex in a financial, structural, and functional nature. Also being considered is the gap between short-term government priorities and perceived long–term priority needs for disaster risk reduction and climate change adaptation. In addition, disaster risk reduction and climate change adaptation are often seen as externally driven, lacking local political champions and institutional commitment. This situation is further complicated by culture and traditional practices involving land ownership, power relationships, and leadership. Common in other Pacific island countries, lack of awareness and poor consultation and engagement mechanisms exacerbates the problems in Fiji.

Within the context of country findings, this assessment has identified priority areas where investment could prove effective in strengthening disaster risk reduction and climate change adaptation. These areas of strategic investment are targeted rather than broad-based, and seek to improve the collection, collation, synthesis, analysis, and dissemination of information that is essential for effective disaster risk reduction and climate change adaptation. The proposed activities reflect priorities identified across governmental and nongovernmental bodies.

The way forward depends to some extent on the continued presence of a "champion" in-country to provide some basis for a sustainable outcome. Any initiatives should also result in capacity development throughout Fiji. Further work is required to identify appropriate areas of activity that meet these criteria and for the development of project contexts with the appropriate sector. Any proposals should form the basis of a longer- term strategic commitment.

A summary of broad situations, gaps, and opportunities is shown in Table 2. The final chapter of this Fiji report expands on these opportunities. ❖

Table 2. Summary of Key Gaps and Opportunities for DRR and CCA in Fiji

Situation	Gap or Impediment	Opportunities
Adequate legislative steps have been taken (i.e., current redrafting of the Disaster Management Act) but are not followed with action.	Arrangements for addressing risk reduction are not penetrating into national or sector development plans and budgets. Hence, there is no operational commitment to address these issues	**Strengthen the institutional environment**, through fostering leadership and supporting capacity-building initiatives at the national planning and budgetary level and follow through to the sector levels.
Data and risk information on threats to life, infrastructure and property is not readily accessible across and between sectors making effective DRR and CCA response difficult.	No operating central system for information management, storage and access to allow vulnerability and risk analyses to inform DRR and CCA initiatives.	**Establish an integrated hazards information and analysis system to facilitate DRR and CCA activities** that would be subject to a thorough review of sector agencies, provided their revitalization of institutional mandates and reactivation of their responsibilities.
Hazard monitoring and data collection in Fiji has regressed in the past decade.	Monitoring networks are degraded and the monitoring agencies are dispersed through a range of departments. Combined with lack of funding and commitment data on future disasters is not being used.	**Review hazard monitoring needs and the institutional arrangements,** particularly for hydrological monitoring combined with meteorological monitoring.
Cyclones, floods, and droughts are key hazards and pose a major threat to food and water security, and social and economic well-being of the nation.	Measures to improve water supply systems and food security and production (subsistence and cash crops) are lacking in communities at risk.	**Water supply and food production systems need to be climate-proofed,** which should involve assessing the increased risks from a changing climate.
Some public infrastructure, coastal settlements, and tourist facilities are sited in low-lying coastal areas and are vulnerable to cyclones, storm surge, flooding, and tsunami.	Capacity in inadequate for planning and development approvals that are required to address exposure to natural hazards (including climate variability).	**Enforcement of land use planning and building codes need to be strengthened,** including the application of reviews by the public, commercial, tourist, and residential sectors; the linking of risk reduction measures with insurance and financial lending instruments should be taken into account in the funding processes.
Awareness programs, such as successful Disaster Awareness Week, have limited potential in extending its message to all communities to promote community engagement.	Community awareness of and attitudes toward DRR and CCA is variable across the Fiji islands, and there is a big gap between awareness and action at the community and local government levels.	**Promotion of community-based awareness programs for community groups, local government, and NGOs**, including education on changing attitudes and behavior critical for responding to DRR/CCA and building resilience of environmental, social, and economic systems to reduce vulnerability. Due to its success, Disaster Awareness Week should be copied in all communities.

Detailed Country Assessment

Legal framework and policies, and their effectiveness

The much-needed *Sustainable Economic and Empowerment Development Strategy 2008–2010,* adopted in 2007 by the Government, could only be effective with practical targets and an implementation plan. These are not included. At this point, there are no planned risk reduction activities coming from the strategy.

Adopted by the previous Government, the *Comprehensive Hazard and Risk Management (CHARM) guidelines* also endorsed the need for disaster risk reduction. These guidelines led to some activities directed by the Ministry of Regional Development but have not been adapted across all government departments, thus limiting coordinated efforts.

At the sector level, a national DRR framework had been proposed through two instruments: an updated draft of the *1995 National Disaster Management Plan* (NDMP) and a draft rewrite of the National Disaster Management Act 1998. Both instruments focus mainly on disaster prevention and mitigation. Their effectiveness could be insured through institutional and political commitment that is now lacking. Implementation of the NDMP awaits development of a National Action Plan (NAP), which depends on governmental priorities and donor funding.

Another important piece of legislation — *the 2005 Environment Management Act* — had potential to become the promotional vehicle for CCA efforts. However, the Act does not explicitly state this statutory underpinning. In December 2007, the Government of Fiji adopted a Climate Change Policy Paper that commits the Government to addressing governance issues, integrating policies, data collection, and capacity building. Since the policy paper neither lists targets nor provides budget and action plans, its adaptation has made no progress.

Fiji issued in 2005 a *First National Communication on Climate Change Strategic Actions*, pursuant to commitments under the United Nations Framework Convention on Climate Change (UNFCCC).

Other relevant legislation is in place and being administered. Fiji's *building codes* are used on a voluntary basis as informal guidelines since there is no institution regulating and monitoring their implementation. As a prerequisite to securing home insurance coverage, the main risk design standards applied to roofs of buildings will be introduced through a Government program to adapt the standards to schools and other public buildings.

There is no evidence that *land use regulations* have been updated to incorporate DRR and CCA components. Evidence shows that if land use regulations and other legal instruments are continually inadequate or not enforced, adverse impacts caused by some coastal development, particularly by the tourism industry, will continue in the future (ADB 2005). Across Fiji, the institutional capacity to control the spread of settlement and tourism development in the sensitive coastal margins is limited from the viewpoints of public and private sector interests. Physical, social, economic, and cultural vulnerability of these settlements is higher when low institutional capacity is coupled with land degradation and changes in rural land use. This coupling can influence food and water security and the quality and productivity of inshore marine waters.

In summary, DRR and CCA policies are currently in place but the institutional arrangements for implementation are ineffective and lack national and sector planning and budgetary provisions.

These plans, policies, and strategies require the following actions to become effective:

- ***Adequate institutional capacity and commitment*** within the key Ministry of Finance and Planning, as opposed to its present view that disaster risk reduction and climate change are environmental or disaster management issues. This position undermines the ability of the Fiji Government to adequately confront the challenges of risk reduction and climate change in the context of national economic and social development.
- ***Integrating DRR/CCA policies across the whole range of relevant portfolio areas*** that have DRR- and CCA-related responsibilities rather than using existing instruments located in individual agencies. Consequently, the Fiji public sector needs to address disaster risk reduction and climate change adaptation contiguously rather than treating both as separate issues.
- ***Linking policy instruments to applicable action plans*** with adequate resources to support new sector-driven instruments promoted and put in place by the Fiji Government.
- ***Promoting the knowledge of risk reduction,*** which tends to be misinterpreted as either a disaster response mechanism or an area to be addressed during the statutory environmental impact assessment process.
- ***Better use of available tools and techniques,*** such as CHARM guidelines and the SOPAC Environmental Vulnerability Index. It requires enhanced data and information exchange across the institutions of government.

Inter-government and agency coordination

Overall coordination of the National Disaster Management (NDM) Plan and the Disaster Management Act is a responsibility of the National Disaster Management Council. Serving the NDM Council, the National Disaster Management Office was recently transferred from the Ministry of Provincial Development and Multi-Ethnic Affairs to the Ministry of Defense, National Security, and Immigration and Disaster Management. The NDM Council is active and supports NDM Office programs. Measures have been underway to review the NDM Plan and the Disaster Management Act in order to address some of the critical gaps. The NDM Office has a role to promote disaster risk reduction through all government sectors and, as a sign of increased commitment to this effort, is strengthening its staff. Serving as the minister in charge of disaster management and the NDM Office, the Minister of Defense also chairs the NDM Council.

The establishment of a National Environment Council to coordinate the formulation of environment-related policies and strategies was proposed under the 2005 Environment Management Act. However, it is uncertain whether the policies and strategies under the Environment Management Act will extend to coordination and implementation of disaster risk reduction.

Coordination measures include several long-established committees and working groups. One of the groups addresses the development of national building codes. Until now, these codes have not been adopted. Also, a long-standing working group on drought operates in Fiji. A relatively new working group was formed to address DRM impact on tourism. A coordination committee in Fiji, chaired by a representative from the private sector, has been working on the Suva Earthquake Risk Management Project. Another working group was more recently formed to study a tsunami early warning system. In light of the lack of evaluation information, the effectiveness of these committees has not been assessed. Experience has shown that in Fiji —as in other Pacific island countries—committees tend to be formed as a reactive instrument, and their effectiveness depends on the dedication and competence of the members who participate.

In 1999, a Climate Change Working Group was formed to interface with the Pacific Islands Climate Change Assistance Program (PICCAP). With the ending of PICCAP, this group no longer operates and, as confirmed by governmental consultations, no alternative has been established to continue CCA activities that have been initiated by international bodies.

Climate change issues are primarily the responsibility of the Department of Environment. The Ministry of Foreign Affairs and External Trade is the political focal point for climate change, particularly on issues related to international conventions and obligations. The Fiji Government proposed that all line ministries establish environmental management units to address the cross-cutting aspects of climate change. This may prove difficult as illustrated by the problems encountered in recruiting skilled personnel for the Department of Environment.

Critical shortages of human resources in Fiji are hampering DRR and CCA activities. The Fiji Meteorological Service is probably the best-resourced technical agency operating although with a minimally sustainable staffing level. The situation is more severe in the Hydrology and Mineral Resources Departments, responsible for monitoring earthquakes, tsunamis, volcanic eruptions, landslides, and other geological hazards. Both agencies are critically under staffed and resourced. These and other line agencies are pursuing DRR and CCA activities, although it is largely on a site-specific project basis. Donor initiatives or regional programs often drive these DRR and CCA projects.

To enhance inter-governmental and agency cooperation in disaster risk management and climate change adaptation, the following weaknesses need to be addressed:

- ***Weak political and institutional commitment, as well as accountability.*** Poor attendance at meetings of coordination groups is one issue. In 2007 the NDM Council held 1 out of 4 scheduled meetings. Much of the coordination is geared toward information exchange and awareness rather than effective implementation. Non-participation and cooperation of leading agencies is cited as the main reason for the ineffectiveness of many committees and working groups. In particular, the establishment of informal bodies for disaster risk management and climate change adaptation demonstrates a low-level concern over accountability.
- ***Poor coordination of intra-governmental activities.*** There is a need to review institutional arrangements and the reallocation of institutional responsibilities with respect to disaster management, risk reduction, and climate change adaptation. Also missing is a one-stop center to help focus leadership and coordination and to avoid proliferation of committees and working groups.
- ***Insufficient understanding of risk reduction as a key development issue.*** For coordination to become more effective, risk reduction must be addressed as a key issue in promoting sustainable development. Within the Fiji Government and in some private sector enterprises, risk reduction is viewed as an environmental impact assessment or a disaster response issue.
- ***Lacks of connection between SEEDS and viable plans of action.*** The DRR and CCA activities are not strongly linked to Fiji sustainable development goals embedded in SEEDS, and there are no matching implementable action plans. It is fundamental to SEEDS effectiveness to set up priorities along with strategic planning and appropriate budgets.
- ***Limited participation of the Ministry of Finance and Planning in DDR and CCA efforts.*** There is a clear need for the Ministry to play a key role in developing national strategies, along with relevant budgets, to lead the nation in disaster risk reduction.

- ***Limited understanding of the differences between disaster risk reduction and disaster response, as well as of the risks from climatologic, hydrological, geophysical, and disease hazard.*** As a consequence, at the decisionmaking level, opportunities are missed to improve understanding of disaster risk reduction in the rehabilitation and reconstruction phases of disaster response. For example, damaged infrastructure is often replaced in situ as a result of lack of a clear understanding of the hazards and risk-exposure faced and more appropriate options are not fully considered. Another example is undertaking flood mitigation solely through river dredging rather than dealing with the root causes, such as deteriorating land use upstream or inappropriate land use on the downstream flood plains. Such knowledge gaps can be remediated by in-house DRR/CCA workshops and training activities.

Planning and budgetary processes

Fiji's planning and budgetary processes do not significantly incorporate DRR and CCA linkages. Although SEEDS does highlight integrating disaster risk reduction into political decisions and states that Government efforts are underpinned by a "risk management approach," no particular strategy is offered to address the issue. Also, no evidence supports the assertion stated in the SEEDS that effective risk reduction projects would be identified and implemented.

Continuing deterioration in governmental support for hydrology, meteorology, and hazard and environment assessments also seems to contradict the SEEDS priorities. The Hydrology Section of the Fiji Government is located in inadequate accommodations at an operational division of the Suva Water Supply. Hydrology should have a higher profile and more prominent presence to emphasize its key role in addressing flooding as the first priority of the Fiji Government. The Hydrology Section also lacks scientific, technical, and budgetary support. As the nation's key hydrological monitoring service, the Hydrology Section should be better equipped and have dedicated field transport. The present situation is viewed as most unsatisfactory by some governmental bodies and business sectors. Other alternatives such as relocation with Fiji Meteorological Service would be possible if adequate financial resources are found. Support to the Hydrology Section is only possible with a realistic Government-supported operating budget.

The Fiji Meteorological Service has a well-established national and regional cyclone warning system. However, it suffers from resource problems common to Pacific island countries: lack of funding and limited professional capacity. The Meteorological Service is a critical regional asset and should be supported by guaranteed long-term international technical support, appropriate capacity-building programs, and adequate funding and staff.

Planning is underway in Fiji and throughout the Region on an all-hazards early warning system. The NDM Office plans to promote this initiative at the village level in Fiji. As such, the system could herald a revival of traditional early warning and disaster preparedness customs and practices.

Fiji should continue to re-allocate existing capital works and maintenance budgets to better respond to major disaster events. Poor resource allocation is reflected in the deterioration of essential services and lack of maintenance and upgrading of infrastructure. There is an urgent need for disaster management and response-specific budget allocations, as well as for development of special financial risk transfer mechanisms to support unforeseen emergency events.

A common response of the Fiji Government to disasters is freezing of capital expenditure. At times this freeze extends to the recurrent expenditure of a range

of ministries. This action is taken by the Fiji Government to offset rehabilitation and rebuilding costs. Many public and private sector consultants contributing to this assessment report view this standard practice as counterproductive since it prevents the delivery of risk reduction by line agencies.

Effective DRR and CCA implementation may prove problematic without the pro-active involvement and leadership from the Ministry of Finance and Planning that would include risk reduction initiatives in national planning and budgets. In addition, while the policy frameworks are reasonably strong, their implementation through the institutional frameworks and the commitment of others requires strengthening.

Greater project funding alone is not a viable solution for enhancing DRR and CCA efforts. To a large degree, minimal investments in DRR and CCA projects in Fiji could be attributed to the prevailing political and economic situation. Without appropriate assistance, Fiji will not be able to train staff with the basic required skills or have resources and general absorptive capacity to formulate and implement DRR and CCA initiatives and incorporate these in sector plans and projects. It also faces the challenge of using data and other risk information for implementing projects to reduce vulnerability and potential adverse impacts from climatologic, hydrological, and geophysical hazard.

Impediments

- ***Absence of a favorable enabling environment at the national level.*** This key institutional weakness applies particularly within the Ministry of Finance and Planning. This governance issue is exacerbated by apparent lack of capacity in understanding and undertaking appropriate policy analysis and framework development of implementable actions. Limited professional understanding of DRR and CCA issues only compounds the inherent difficulties from lack of skill and expertise.
- ***Insufficient operational commitment to DRR/CCA initiatives.*** Across Government, the absence of an operational culture and commitment fails to generate a risk management approach in planning and budget preparation. This deficiency is attributable to inadequate capacity building and DRR/CCA championing at the highest levels of government and civil society.
- ***Ineffective governance/institutional mechanisms to address DRR/CCA issues.*** Some key line agencies are not capable of delivering on either risk reduction or climate change adaptation due to systemic administrative and operational deficiencies.
- ***Limited implementation of strategic and location-specific development planning for high-risk zones.*** Disaster risks increase in parallel as both exposure and vulnerability factors increase. This situation is sometimes best demonstrated by the poor planning of tourist resorts and infrastructure development in the fragile coastal zone where lives and property are vulnerable to extreme weather events, storm surge, and flooding.

Vulnerability and risk assessments

The exposure of coastal towns and cities to disasters has increased with their expansion due to reclamation and urban development into more geologically marginal areas. Civic assets become more exposed to inundation from the sea and increased landslide risks in less geologically safe areas. It is particularly visible in and around the national capital, Suva. Recognizing this vulnerability, SOPAC-assisted mapping for flood and landslide hazards is being carried out.

Poor or inappropriately planned agricultural practice has exacerbated the impact of droughts and floods. The lack of an assessment of the effect of certain non-indigenous forestry on groundwater and base-stream flows could undermine effective water resources manage-

ment. Inappropriate land use—such as promoting agriculture on steep terrain—has caused what is considered to be near uncontrollable soil erosion in some major watersheds. Thus, increased river sedimentation has influenced the rising occurrence and severity of flooding. At the national level, there is no strategy to understand the threat or to address flooding problems with preventive initiatives—control land use on steep slopes, reduce land degradation, and rehabilitate severely eroded land surfaces—at the most vulnerable spots.

Coastal erosion, due to changing climatic conditions or from human-induced interference with coastal processes, also threatens coastal communities and infrastructure. Coastal engineering is often not based on understanding of climate drivers of geomorphic change. In these instances, sea-level rise scenarios or the complexity of coastal oceanographic and hydrodynamic conditions and processes operating on the shoreline require more attention.

The average annual social and economic losses from geological and climatic hazards in Fiji are unclear when reviewing the mixed sources with disparate figures. Between 1950 and 2004 there were a reported 38 disasters with estimated losses of approximately US$2.2 million. The highest reported damage causing climatic event in Fiji was Cyclone Kina in 1993. The Fiji Government estimates 100 in human lives lost and FJ$500 million in economic loss from tropical cyclones over the last decade (1997-2007) (Government of Fiji, 2007c). In this period Cyclone Ami in 2003 caused economic losses of more than FJ$44 million, which is less than half the 2005 ADB figure. Other estimates reported that the 2004/2005 and 2006/2007 floods caused FJ$135 million and FJ$20 million in damages, respectively. By comparison, figures provided by the Ministry of Regional Development cite losses in more recent years: flash flooding caused damages of FJ$113,000 in 2005 and FJ$15 million in 2007; and in 2008 Tropical Cyclone Gene caused FJ$45 million in damages. The Ministry further states that in the period since 1985 there have been 130 disaster-related fatalities. In 1998 an outbreak of dengue fever amounted to FJ$12 million in economic costs to Fiji.

Apart from a 2005 study carried out by SOPAC and the University of the South Pacific (McKenzie and others 2005) no other more detailed socio-economic loss data are readily available. The inconsistency in damage and economic loss data coupled with differences in assessment procedures makes it difficult to substantiate average annual losses from hazards, either singly or in aggregate. Consequently this is an impediment to any economic evaluation of risk-reduction measures and funding. Overall, adequate socio-economic data to support rigorous vulnerability assessment is critically needed.

The absence of accessible risk profiles is also a concern. Over the past 20 years, at-risk assets have increased significantly, particularly with the proliferation of tourism development facilities and infrastructure along the main island coasts and on more and more smaller offshore islands. In this context the tourism sector, which is important to Fiji's economy, is vulnerable in two ways: in the short term to the possible impact of category-4 or -5 cyclonic events and in the medium term to sea-level rise, storm surges, and the impact of a locally generated tsunami.

Disaster risks in Fiji often appear to be based on post-event perceptions and usually are non-quantifiable. Moreover, the descriptions of threats are often anecdotal. Adaptation is largely pursued as a pilot project or a site-specific study with no obvious strategy for up-scaling. Characteristically, analytical work is also difficult in the absence of a comprehensive database containing raw geophysical, climatological, and hydrological data; hazard maps; and synthesized biophysical information.

Where datasets have been collated, the quality is often questionable due to incomplete or missing data. Furthermore, data are not shared between specific data gatherers in the various governmental sectors. The Mineral Resources Department and the Environment Department, which are responsible for impact assessment, do not share data.

Often global or regional data sets are not easily accessible in Fiji for varying reasons. Additionally, country-based resource managers, who would be more interested in interpretation rather than raw data, cannot obtain the types of data-derived products they require for natural resources and risk management. Similarly, in terms of future changes in risk management, there is no evidence that agencies maintain up-to-date databases of meteorological and climate data and sea-level projections that could be used for DRR and CCA purposes.

Gaps

- ***Poor scientific understanding and monitoring of hazards.*** Hazard-monitoring agencies are poorly resourced and lack technical skills. Monitoring networks are degraded and lack operational budgets. Agencies are uncoordinated, and there is little sense that their services are appreciated.
- ***Asset data and information is not made available for the purposes of assessing exposure to risks.*** These data are required to ensure effective management and planning. Current activities are largely ad hoc as data collection and information for risk reduction management is not a requirement or governmental strategy. The DRR and CCA programs have no rigorously documented socio-economic base to build from for risk assessment and reduction.
- ***Limited vulnerability mapping to guide development planning.*** This is a serious deficiency and a matter of urgency. It is likely to require donor support.
- ***Poor evidence of systematic use of climate change information for assessing future changes in risk,*** such as climate-related diseases or possible changes in flood frequencies. Socio-economic analyses of disaster impacts and future risks are fundamental to decisionmaking on risk reduction initiatives.
- ***Limited meteorological and hydrological datasets, databases, ecosystem monitoring, and information system management.*** Specifically, a unified and consistent data and information system for all the government sectors does not exist, and there are no channels of information exchange for government agencies. This is a matter of urgency and may need donor support.
- ***Shortage of technical and scientific resources at monitoring institutions.*** Although flooding is recognized as a priority area of disaster risk response, the sustainable collection and analysis of hydrologic data is not occurring.

Knowledge, data, and tools

The National Disaster Management Office leads the national effort in carrying out post-disaster damage assessments. Fiji also has access to the UN Disaster Assessment and Coordination Team. In the past Fiji could also call upon New Zealand and Australia for post-disaster airborne surveys.

The following is a list of Fijian Government departments and other organizations and institutions with the technical data provided within their areas of statutory responsibility and operational interest:

- ***Fiji Meteorological Services***–rainfall data, weather forecasting, climatology;
- ***Land and Water Resources Management Division***–drainage, irrigation, land use planning;
- ***Mineral Resources Department***–hydrogeology, seismology, engineering geology, coastal processes;

- ***National Disaster Management Office***–post-disaster damage assessments;
- ***Environment Department***–environmental impact assessments, waste management, pollution control;
- ***Divisional Engineer*** (Hydrology Section)–hydrological data;
- ***Fiji Land Information System***–land and remotely sensed information; and
- ***Ministry of Health and Fiji School of Medicine***–water- and vector-borne diseases.

Other external organizations, among the following, contribute biophysical and socio-economic information to Fiji Government, the private sector, and civil society:

- ***Secretariat of the Pacific Applied Geoscience Commission***–hazard and risk mapping, sea-level rise products, oceanographic information (including the IOC Global Ocean Observing System data), satellite and airborne data and imagery, coastal resources and processes data, water resource management information;
- ***Pacific Tsunami Warning Center***–tsunami warnings;
- ***Secretariat of the Pacific Regional Environment Program***–climate updates in collaboration with National Institute for Water and Atmospheric Research in New Zealand and other partners;
- ***World Meteorological Organization Global Climate Observing System***–regional climatological information;
- ***University of the South Pacific***–laboratory analyses, community vulnerability studies, professional development in disaster management and climate change;
- ***Secretariat of the Pacific Community***–pandemic awareness, germplasm center, land use planning; and
- Others, including Bureau of Meteorology Australia.

There is a strong body of hazard knowledge and historical hazard information available within each of the hazard-monitoring agencies in Fiji. The Fiji Government acknowledges that current hazard monitoring, data collection, and analysis tools are deficient and need strengthening. Much of available information is not readily accessible or transferable to other agencies. Government's concern is laid out both in the SEEDS 2008-2010 (Section 9.13) and the National Climate Change Policy Framework for Fiji (Section 6) of December 2007.

The hydrological monitoring network has become non-operable over the past decade. The Hydrology Section of the Public Works Department notes that its 2008 operational budget was halved from its 2007 allocation. And with a critical shortage of technical staff, a credible gauging and monitoring program has proven impossible to maintain. A 2007 EU-funded Navua catchment flood monitoring and warning project is not operating because the gauging station cannot be maintained. A similar prognosis exists for the 2008 HYCOS-funded Rewa catchment flood monitoring and early warning system.

The better-served meteorological network provides a regional service with support from the World Meteorological Organization and links to the Bureau of Meteorology in Australia and National Institute for Water and Atmospheric Research in New Zealand. However the Fiji Meteorological Service, in addition to its weak capacity, requires enhanced monitoring network and analysis tools to identify and quantify the increasing climate variability potentially associated with climate change.

The seismological monitoring network is degraded and does not have a 24-hour capability. The Japan International Cooperation Agency has identified a program to upgrade the network and monitoring capability.

Hazard monitoring of cyclones and earthquakes is done by national and international bodies. Cyclones are tracked by the Fiji Meteorological Services with the support of the U.S. National Oceanographic and Atmospheric Administration. Tsunami warnings are provided by the Hawaii-based Pacific Tsunami Warning Center.

Considerable time and resources have been placed on participation in a regional tsunami warning system. There is considerable professional opinion that believes this effort may be somewhat misdirected with respect to understanding the geotechnical vulnerability of the Fiji islands. There is some experiential evidence that the tsunami threat to Fiji will be from locally generated tsunamis, such as the 1953 tsunami. Tsunami, like the one that struck the Solomon Islands on April 2, 2007, had faster impact than the reaction time of any known early warning system.

Some risks and threats from climate change do not result from catastrophic events. Changes in biology —often slow and imperceptible to the naked eye, such as increasing aridity, marine sedimentation, coastal erosion, and altered ecology—require tools and programs for identifying trends over long-term monitoring rather than reacting precipitously to irreversible damage. Currently, such biophysical changes are not being monitored except for coral bleaching studies undertaken by the University of the South Pacific.

Support of decisionmakers is necessary to invest in long-term monitoring in order to assess trends and take precautionary steps to reduce the risks that may arise from potentially disastrous situations. Overall, monitoring of climatological, hydrological, and geophysical systems in Fiji is at a very basic level. More critical, systematic monitoring of policy implementation and/ programmed actions in and among governmental agencies is lacking. Overall, it is extremely difficult to ascertain whether DRR/CCA activities are achieving their desired outcomes.

Gaps

- ***Weak institutional and support arrangements, unsteady funding, and lack of coordination for hazard agencies.*** The importance of hazard monitoring to support sustainable development decisions goes widely unrecognized, although it is gaining recognition in the SEEDS. Support for hydrological and meteorological services is growing.
- ***Lack of technical or scientific expertise to observe and assess natural and human disaster events.*** There is an urgent need to provide national capacity to learn from all types of disaster events. Specifically, developing realistic hazard and vulnerability maps and assessment is required.
- ***Limited disaster mapping and assessment support.*** Ability to access land information and mapping capability or airborne platforms to carry out rapid post-disaster mapping and assessment needs to be improved. There is also need for adequately resourced remote sensing programs and expertise to interpret data.
- ***Limited integrated information systems for hazard data and analysis with GIS capability.*** There is limited ability to store, analyze, and map hazard data. Data availability in and among government agencies is an important input to decisionmaking on DRR and CCA issues.

Monitoring and evaluation

There is currently little or no monitoring or evaluation conducted by any government agency of risk reduc-

tion activities related to hazards or climate change. A number of objectives for environmental sustainability (including climate change) and for reducing vulnerability to disasters and risks are listed in the 2008-2010 Government strategy (SEEDS) but commitment to monitor or evaluate progress is lacking.

In addressing the institutional framework objectives for good governance under SEEDS, the Government should introduce performance budgeting, and monitoring and evaluation arrangements in order to measure progress against its commitments.

Awareness raising and capacity building

On the basis of regional and local experience, more emphasis should be placed on public awareness, education, and taking precautionary measures.

On-going DRM awareness programs, coordinated by the NDM Office, focus primarily on disaster management with some elements of family risk reduction. These program, as recognized by the NDM Office, need to be strengthened to include community exercises. The Suva-based, Pacific program director of The Asia Foundation/U.S. Office of Foreign Disaster Assistance thinks that there were two main problems related to the promotion of disaster risk reduction: (a) much of the awareness activities were conducted at the national level and were not filtering down to provincial and community levels, and (b) this was in part due to the lack of effective support for the NDM Office across government.

The main awareness raising effort in Fiji is the NDM Office-led annual National Disaster Awareness Week held in October at the beginning of the hurricane season. In 2007 this event encompassed a range of activities in 19 different centers throughout 3 of the 4 national administrative divisions. The budget for the event has been rather small: in 2007 the government budgetary allocation for its awareness activities was less than 2 percent of its annual budget.

Hazards are major socio-economic concerns to many governmental bodies, NGOs, and the tourism sector. These are often expressed in terms of identifiable threats such as sea-level rise, coastal erosion and deposition, food and water security (especially in terms of availability and quality), pollution of the marine environment, and the degradation of terrestrial and marine ecosystems.

The media in Fiji provide substantial coverage of disaster-related news. Awareness of potentially catastrophic situations in the Fiji water sector has not reached all levels of government and communities. Continued use of the media is an important tool in emphasizing risk awareness of the threat to water security by climatic variability and change, and then turning awareness into action.

An effort to mainstream DRR lessons into curricula has started in 6 pilot schools. The Fiji Schools of Medicine and Nursing have also introduced DRM courses to its second-year students. Over the past 12 to 13 years, The Asia Foundation/U.S. Office of Foreign Disaster Assistance has provided significant training to Fiji nationals. This package offers 6 training courses covering disaster management, damage assessment, and risk management; and another DRR course is being developed. The Asia Foundation/U.S. Office of Foreign Disaster Assistance has been running about 20 in-country courses with an average of 24 to 28 participants and has attracted Fiji participants who have attended 18 regional courses. This would equate to over 500 nationals being exposed to some form of awareness training. Regional organizations and NGOs, such as Fiji Red Cross and Live & Learn, also participate in awareness programs.

In terms of climate change capacity building, the University of the South Pacific, the region's largest tertiary institution located in Suva, initiated a CCA program in 1999. Aimed at capacity building for Pacific island countries, this PICCAP-funded initiative was conceived, developed, and initially delivered by the International Global Change Institute at the University of Waikato. The program provided courses for professional training, as well as post-graduate and undergraduate students. Subsequently, the program was suspended due to lack of scholarships to maintain a critical number of trainees, but was re-instated in 2008. Professional and technical support to the University of the South Pacific for development of new CCA courses and program delivery has been made available from the University of the Sunshine Coast in Queensland, Australia. The program still faces potential problems due to limited financial support for students from Fiji and other Pacific island countries.

Impediments

- ***Obtaining means to measure the effectiveness of public awareness efforts or to determine whether there has been any measureable behavioral change at the community level.*** For example, coastal communities aware of the risks to their lives and property can decide independently whether or not to pursue measures to reduce risks.
- ***Gathering funds to effectively bridge the gap between national and community awareness-raising initiatives.*** This needs to be addressed at all levels and may require initiating of innovative measures to fund community-based activities.
- ***Scholarships for CCA tertiary-level professional development and training.*** This is a regional problem and part of a greater capacity-building issue, and as such it should be addressed with appropriate donor support.

Coordination among donors and key stakeholders

The regional Pacific Partnership Network plays a useful information and coordinating role for disaster risk reduction. This SOPAC-facilitated network encompasses over 40 member agencies and has championed the development of National Action Plans and the Pacific Disaster Net, an improved disaster information system. Operationally, the Pacific Partnership Network has no power of decisionmaking, funding, or implementing. Project implementation is through the initiatives of individual members or groups.

A Regional Roundtable on Climate Change received attendance from donor organizations and the Council of Regional Organizations in the Pacific. Operationally, the Roundtable is viewed as an information exchange mechanism, but whose effectiveness has yet been assessed.

Over the past decades, AusAID and NZAID have been key bilateral donors for Fiji. Both of these donors have suspended assistance to Fiji after its last coup and as a consequence, several DRR/CCA activities are presently left unfunded. Australia was about to provide FJ$250,000 toward the formulation of a NAP, and New Zealand support was anticipated for a flood hazard mapping project; both of these activities now face implementation problems

At the regional level, the main DRR proponents are SOPAC and the UNDP Pacific Center. The CCA projects are initiated through the Secretariat for the Pacific Regional Environment Program and the UNDP country offices. Fiji also accesses DRR assistance and related environmental activities, including CCA related, through the Secretariat for the Pacific Regional Environment Program, Secretariat of the Pacific Community, University of the South Pacific, and other regional organizations. The major donors who make contributions to Fiji are the European Union,

the Global Environment Facility, the United Nations Development Program, the World Meteorological Organization, the World Health Organization, and The Asia Foundation/U.S. Office of Foreign Disaster Assistance. Of these organizations, the European Union has possibly emerged as the largest donor in the DRR area. Fiji continues to benefit from EU programs starting with the regional EDF8 reducing vulnerability program. The European Union is also a major donor in the Pacific Hydrological Cycle Observing System (P-HYCOS) program. Risk reduction and adaptation projects get their start from donor initiatives or regional programs such as the P-HYCOS.

The impact of flooding on food security has been identified as Fiji's top priority for the Pacific Adaptation to Climate Change funds. The Ministry of Agriculture (Land and Water Resource Management Division) will implement these funds. Support has been provided for studying the Navua and Rewa river basins. Work in these major basins has commenced as part of the P-HYCOS program. The New Zealand National Institute for Water and Atmosphere will execute this SOPAC-implemented initiative. Fiji Government has made subsequent requests to SOPAC for additional assistance with implementing further work in catchment hydrology.

The Japan International Cooperation Agency is a bilateral donor specifically supporting DRR initiatives and continuing support of other environmental initiatives in Fiji. About 10 years ago, Japan was the key donor in refurbishing the main meteorological facilities at Nadi Airport and has supported the seismological network in Fiji for a long time. More recently, Japan was involved in upgrading the monitoring systems in Fiji and Tonga and has supported the on-going river dredging program in Fiji.

Government agency representation and interests initiate requests or proposals for donor support for DRR/CCA activities. Specifically, the Department of the Environment represents Fiji's CCA interests at the Secretariat for the Pacific Regional Environment Program. The Mineral Resources Department and the NDM Office represent Fiji's DDR agenda at SOPAC. Other line ministries represent Fiji's interests through their own contacts with international bodies, such as the Ministry of Health with the World Health Organization. However, it is done with what appears to be minimal intra-governmental communication and coordination.

Regional organizations are also under-staffed and unable to service their member countries, such as Fiji, in a timely manner. For example, Secretariat for the Pacific Regional Environment Program has the services of just one person handling both the Global Climate Observing System and regional meteorological issues. Additionally, although SOPAC appears to be well resourced, it has to spread this capacity over some 14 countries; consequently, the Pacific island countries cannot fully rely on SOPAC as a substitute for the lack of in-country capacity. In some ways, the activities provided by donors and regional organizations mask the true nature of challenges being faced with DRR/CCA implementation in Fiji.

Possible areas of improvement:

- ***Donor awareness of Fiji's specific DRR and CCA needs.*** Apparently, over the past years there has been little evidence that donor support for DRR/CCA programs in Fiji has been addressing priority institutional strengthening, capacity building, and technical support issues. Donor support is urgently needed to address these issues of core risk reduction and climate change vulnerability and adaptation. The lack of donor attention to these core needs is probably influenced by Fiji's own lack of support for DRR/CCA initiatives, which are not listed among the island's priorities during bilateral aid negotiations.

- ***Sufficient absorptive capacity to take advantage of donor assistance.*** Some assistance provided to Fiji is unsustainable since the absorptive capacity of the country is weak. For example, professional and technical capacity is extremely limited, if not critical, within the hydrology services in the key area of Fiji's flood management. Hydrological measurement and analysis has been designated a low priority. The main focus of government action with respect to riverine flood control appears to be on dredging rather than up-land stream and land surface rehabilitation. This engineered approach is viewed as unsustainable: little effort is being made to control the erosion of excessively cleared slopes. A proper understanding of the rates of erosion and riverine siltation requires inputs of climatological, hydrological, and soil data, which is not readily available.

- ***Joined efforts by donors and their respective mandated agencies.*** The separation of DRR and CCA issues is perpetuated when donors continue to support different agencies whose own mandates are narrowly focused. The Pacific Partnership Network and the Climate Change Roundtable have promoted separate DRR and CCA development; as regional collective bodies, they could use their influence to address the issue of joining those two areas of concern.

- ***Regional leadership on sustainable development.*** The working group on Sustainable Development of the Council of Regional Organizations in the Pacific has been ineffective in promoting risk reduction activity as part of the sustainable development approach. This group should be responsible for active regional coordination, while it focuses on providing briefing and position papers. ❖

Opportunities for Investment

This assessment highlights the current country status, gaps, opportunities, and barriers related to national policies, strategies, plans, and activities, as well as with the enabling environment for a comprehensive risk management approach to natural hazards. It further focuses on the capacity to undertake a comprehensive approach, including institutional arrangements, human resources, public awareness, information, and national budget allocations. From Fiji's assessment, it is evident that the situation is a little more complex than in many of its Pacific island neighbors. While the enabling environment in terms of policies and regulations is reasonably well developed, the institutional arrangements are weak in giving effect to the policies. It is evident that commitments to meet international obligations and internal programs are not supported by current budget and institutional arrangements. Progress depends on the implementation of SEEDS.

Policymakers, sector officials, and various donors, and financial institutions have identified key institutional weaknesses relevant to planning and budgeting, as well as hazard monitoring for weather, climate, and flood. The Government might want to pursue any of these options with its own resources, with support from the international donor community, and/or international financial institutions such as the Asian Development Bank and the World Bank.

Awareness of the need for disaster risk reduction and climate change adaptation with new organizational arrangements appears widespread within the Government of Fiji. Disaster management and response also seem to have firm institutional and legislative basis as demonstrated by the many agencies and actors engaged throughout the country that have some role related to disasters and climate change. However, there are critical and systemic institutional weaknesses that with the proper enabling environment provide an opportunity for strengthening and mainstreaming DRR and CCA initiatives.

Prerequisites for an enabling environment are centered on addressing accountable performance budgeting, encouraging broader participatory planning, ensuring high-level inter-sectoral coordination and leadership, and demonstrating national commitment through the realistic allocation of national budgets. At the heart of Fiji's DRR and CCA effort, the Ministry of Finance and Planning requires well-planned strengthening and capacity building. Without this, all DRR and CCA efforts in Fiji would continue to be ad hoc and deprived of leadership. This role would be further strengthened if it were implemented in parallel with implementing SOPAC-issued Comprehensive Hazard and Risk Management guidelines.

As is common in many countries, Fiji could improve its communication and operational links, as well as its central system for information management, storage, and access. The country has a number of information system models such as Fiji Land Information System based in the Lands Department; unfortunately, they are as yet too narrowly used and data-focused. It would be advisable to build an integrated all-hazards information system and tools (with GIS capability).

Opportunities also exist for addressing critical gaps in awareness raising and encouraging behavioral changes at the community level. As a reaction to the most recent disaster, flood mitigation and related concerns of greater food security emerged as a country priority. Fiji has identified this as top priority for support from the GEF Pacific Alliance for Sustainability and GEF Pacific Adaptation to Climate Change. As in other countries, the need for risk reduction instruments, such as the enforcement of improved building codes, is highly necessary; but might be better addressed through some regional initiative.

Not unique to Fiji but definitely critical to any sustainable DRR/CCA implementation is the issue of capacity both in terms of human skills and resources,

as well as technical institutional capacity. Short-term challenges lie in the broader area of climate-related risks and, more specifically, in the water sector. The hydrological services in Fiji are under-resourced and verge on being dysfunctional. Without a sustainable hydro-meteorological service, the country remains extremely vulnerable, putting sustainable development and food and community security at risk. Finally, another priority issue should be the strengthening of the Fiji Hydrological and Meteorological capability.

Annex A expands on the three main proposals for opportunities to support DRR and CCA programs in Fiji. The tables provide preliminary information on indicative costs, timeframes, and first-order actions and tasks. This information should be sufficient for the development of detailed proposals and terms of reference for possible further investment opportunities. ❖

Annex A. Proposals for Support to Fiji

Proposal	**F1 Strengthen Integrated Hazards Information System and Tools (with GIS capability)**				
Country/sector	**Fiji: Hazards advisors and sector users**				
Goal and purpose	**To inform and promote risk reduction decisions through information sharing and sound data management, analysis and presentation**				
Scope	**National**				
Lead agency	**To be determined with Ministry of Lands and the NDM Office**				
Cost and duration	**US$220,000 over 12 months**				
Hazards targeted	***Risk reduction measures***	***Key gaps/Barriers***	***Tasks***	***Cost US$k***	***Time-frame***
Wind, storm surges Sea-level rise Climate change extreme events Coastal inundation and erosion Fire Droughts, Fresh and marine waters pollution Pandemics	Evaluate and map hazards Assess risks and map vulnerability Map assets and assess critical infrastructure Monitor environmental changes and increased exposure to risks	Generally weak information management systems in most agencies and no Information System Management policies. Much historical hazard information is still hard-copy based. Limited capacity for information system management Weak hardware and software computing capacity Limited tools and models for resource managers	Provide technical assistance support (8 person months) for development of an integrated hazards information system including: – Development and adaptation of a Hazards Information Policy addressing: • data sharing and availability • single GPS datum/projection system for Fiji • catalog of data to be held • datasets to be made available digitally – Assessment of data needs and products for DRR/CCA – Identification of long-term storage requirements, analysis tools and mapping needs – Acquiring appropriate computer hardware, software and high-speed Internet connection – Supporting capacity building through populating information system with available historical data and undertaking vulnerability mapping and risk modeling and for climate change& risk prediction Fiji Government to ensure sustainability through annual recurrent budget for data & image acquisition, hard/software maintenance, and communication access costs	160 30 30	Year 1 Year 2 Year 2

Continues

Annex A. Proposals for Support to Fiji *Continues*

Proposal	**F2 Strengthen Risk Reduction Policy, Planning, and Budgetary Arrangements – SEEDS 9.13 Objectives**				
Country/sector	**Fiji: Planning, Finance, Climate Change, Disaster Risk Management**				
Goal and purpose	**Country policy**				
Scope	**To promote the mainstreaming of risk reduction initiatives, through strengthened policy, decisionmaking and funding frameworks**				
Lead agency	**Ministry of Finance and National Planning with Dept. for Environment and Ministry for Province Development**				
Cost and duration	**US$250,000 over 10 months**				
Hazards targeted	***Risk reduction measures***	***Key gaps/barriers***	***Actions and tasks***	***Cost US$k***	***Time-frame***
All hazards	Hazard and Climate Change risks assessed Policy frameworks developed for decision-making Planning and budgeting mechanisms addressing risk reduction issues through all sectors	Risk issues not on political or departmental priorities Departmental barriers Skills in risk management lacking	Provide technical assistance support for: – Review of the hazard profile of Fiji and the potential effects of climate change in exacerbating climate risks – Development of a policy framework for a whole of government mechanism for addressing risk as a development issue within sector planning and budgeting. Complete the review of the NDMP and the Act and address the integration of DRR and CCA – Strengthening Ministry of Finance and National Planning capacity for understanding and bringing a focus to this issue – Strengthening political and departmental awareness of hazard risk issues and how to reduce them, in order to enhance sustainable development	50 100 70 30	2 months 4 months 2 months 2 months

Annex A. Proposals for Support to Fiji

Proposal	**F3 Rationalize and strengthen the hydrological and meteorological capability for Fiji**				
Country/sector	**Fiji: Hazards monitoring and advice**				
Goal and purpose	**Functional and coordinated hydro-meteorological capability, by strengthening and rationalizing hazards monitoring and advice capacity to inform CCA and DRR issues**				
Scope	**National and related to HYCOS and Meteorological Office review**				
Lead agency	**National Environmental Council, with Fiji Meteorological Service, Ministry of Works**				
Cost and duration	**Phase 1 US$1.25 million over 2 1/2 years, Phase 2 US$3.0million to follow**				
Hazards targeted	***Risk reduction measures***	***Key gaps/barriers***	***Actions and tasks***	***Cost US$k***	***Time-frame***
Cyclone Storms Flooding Tsunami Wave surge Coastal inundation Drought – including climate change effects for all these hazards	Improve monitoring network for weather, rivers and climate change Improve capacity for hazard advice Improve arrangements for managing the services	Inadequate monitoring networks to provide credible data Inadequate institutional arrangements to support a credible service Insufficient capacity and resources to manage the networks Insufficient capacity to develop advice to inform DRR/CCA issues	Review the meteorological and hydrological monitoring networks and identify minimum requirements to inform weather, hazard management and climate change needs Review and develop institutional arrangements to support a credible and sustainable level of service Implement institutional arrangements Identify and provide for necessary systems and tools to support the service Enhance the meteorological, hydrological and climate change networks to the minimum required level	*Phase 1* 150 100 500 500 *Phase 2* 3,000	Year 1 Year 1 Year 2 Year 2 Year 3

Annex B. Project Team and People Consulted

Project team

Alf Simpson	Consultant, Australia
Graham Shorten	Consultant, Australia
Richard Warrick	Consultant, New Zealand

People consulted (Country visit, March 11-14, 2008)

Salomone Karusi	Acting Director, NDMO
Manasa Vaniqi	PS Min of Provincial Development and Multi Ethnic Affairs
Epeli Nasome	Director, Dept of Environment
Laisenia Naitila	Executive Officer, NDMO
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Waisea Quminikelo	Principal Administrative Officer, Emergency Coordination, NDMO
Colin Simmons	Principal Agricultural Officer, Land and Water Resources Management Division
Mukesh Chandra	Executive Officer ,Mineral Resources Department
Gulab Chandra	Administrative Officer, Mineral Resources Department
Emosi Davetanivalu	Economic Planning Officer, National Planning Office
Viliame Tuimanu	Administrative Officer, Policy Research Risk Management, NDMO
Jope Sadranu	Medical Officer, Ministry of Health
Eliki Malodali	CCD Commissioner Central
Lagisoa Delana	Tailevu, Provincial DISMAC
Manoa Malani	Director, Tourism
Rajendra Prasad	Director, Fiji Meteorological Services
Ana Vesikula	Director, Development Services, Min of Provincial Dev
Pajiliai Dobui	Risk Manager Policy Research, NDMO
Joeli Rokovada	Commissioner, Western Division, Fiji Government
Lloyd Smith	Water Sector Advisor, SOPAC
Peni Bava	Acting Hydrologist, Hydrology Section, Ministry of Works
Ravindra Gopal	Technical Assistant, Hydrology Section, Ministry of Works
Joeli Cawaki	Director NDMO (July 08)

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