



69455

# Acting Today For Tomorrow

**A Policy and Practice Note for  
Climate- and Disaster-Resilient  
Development in the Pacific Islands  
Region**



**THE WORLD BANK**



**GFDRR**  
Global Facility for Disaster Reduction and Recovery



# Acting Today For Tomorrow

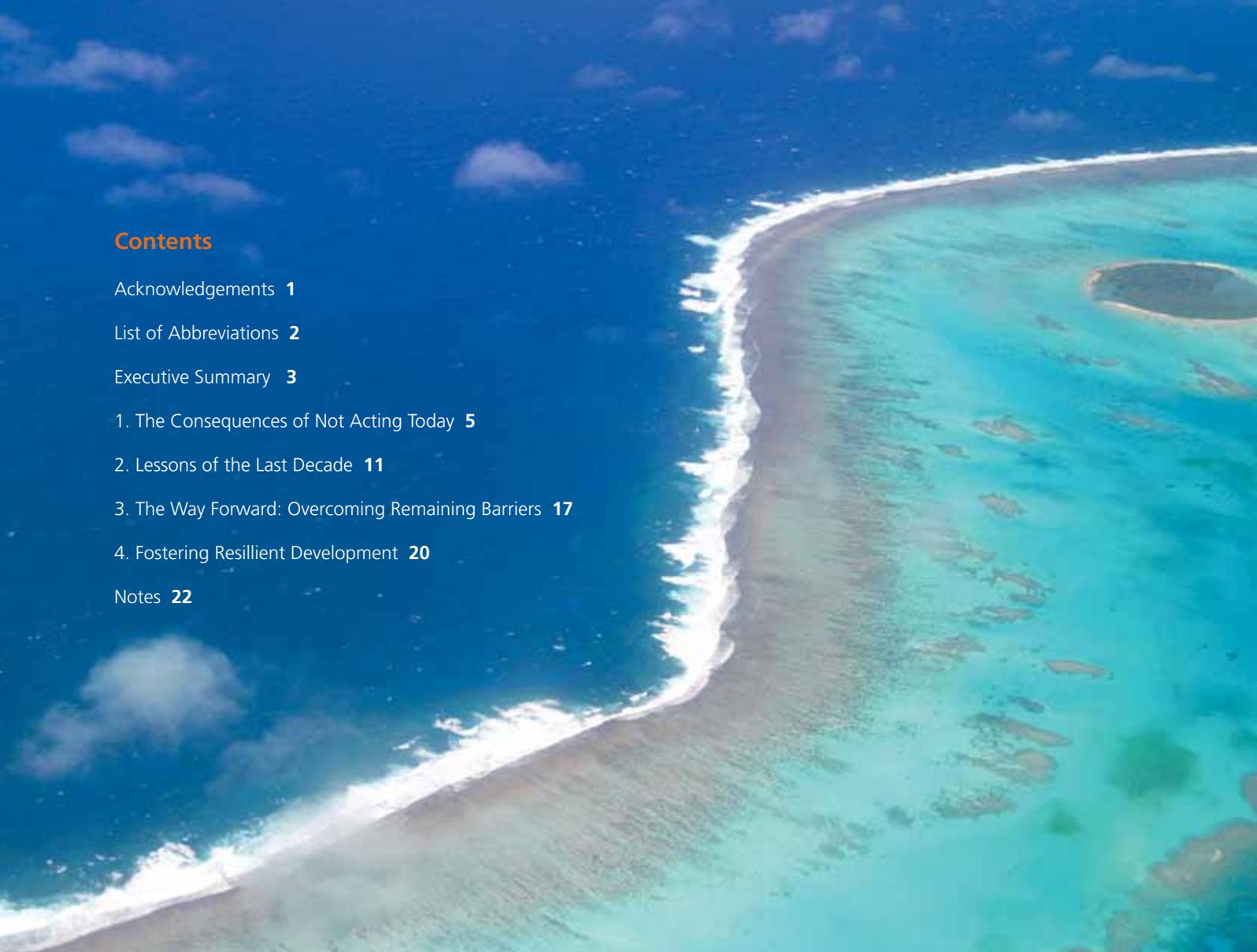
**A Policy and Practice Note for  
Climate- and Disaster-Resilient  
Development in the Pacific Islands  
Region**



**THE WORLD BANK**



**GFDRR**  
Global Facility for Disaster Reduction and Recovery



## Contents

Acknowledgements	1
List of Abbreviations	2
Executive Summary	3
1. The Consequences of Not Acting Today	5
2. Lessons of the Last Decade	11
3. The Way Forward: Overcoming Remaining Barriers	17
4. Fostering Resilient Development	20
Notes	22

Photo: iStockphoto

© 2012 International Bank for Reconstruction and Development /  
International Development Association or

### **The World Bank**

1818 H Street NW  
Washington, DC 20433  
Telephone: 202-473-1000  
Internet: [www.worldbank.org](http://www.worldbank.org)

This work is a product of the staff of The World Bank with external contributions. The findings, interpretations, and conclusions expressed in this work do not necessarily reflect the views of The World Bank, its Board of Executive Directors, or the governments they represent.

The World Bank does not guarantee the accuracy of the data included in this work. The boundaries, colors, denominations, and other information shown on any map in this work do not imply any judgment on the part of The World Bank concerning the legal status of any territory or the endorsement or acceptance of such boundaries.

### **Rights and Permissions**

The material in this work is subject to copyright. Because The World Bank encourages dissemination of its knowledge, this work may be reproduced, in whole or in part, for noncommercial purposes as long as full attribution to this work is given.

Any queries on rights and licenses, including subsidiary rights, should be addressed to the Office of the Publisher, The World Bank, 1818 H Street NW, Washington, DC 20433, USA; fax: 202-522-2422; e-mail: [pubrights@worldbank.org](mailto:pubrights@worldbank.org).

# Acknowledgments

This Policy and Practice Note was prepared by a team led by Emilia Battaglini (Task Team Leader, World Bank) comprising Michael Bonte-Grapentin (World Bank), John Hay (independent consultant), Cristelle Pratt (independent consultant), and Olivia Warrick (World Bank), under the overall guidance of Ferid Belhaj, John Roome, Charles Feinstein, and Abhas Jha (World Bank).

We benefitted greatly from the feedback and guidance of core peer reviewers and advisors from the Pacific region and from the World Bank.

The regional peer reviewer teams consisted of Peter Adams (formerly Director, New Zealand Agency for International Development), Catherine Bennett (formerly with the Australian Agency for International Development), Hon. Mark Brown (Minister of Finance, Cook Islands), Tekau Frere (Ministry of Environment, Energy and Mining, French Polynesia), Moortaza Jiwani (United Nations Development Programme), Jude Kohlhasse (Ministry of Natural Resources and Environment, Samoa), Padma Lal (International Union for Conservation of Nature), Marc Overmars (Asian Development Bank), Netatua Pelesikoti (Secretariat of the Pacific Regional Environment Programme), Kevin Petrini (United Nations Development Programme), Angelika Planitz (United Nations International Strategy for Disaster Reduction), Mosese Sikivou (Secretariat of the Pacific Community), and Kaliopate Tavola (formerly Minister of Foreign Affairs, Fiji).

The World Bank peer review team consisted of Sofia Bettencourt, Milen Dyoulgerov, Francis Ghesquiere, Ian Noble, and Samuel Wedderburn.

We are also very grateful to the following individuals for their comments and input: Christophe Crepin, Habiba Gitay, Robert Jauncey, and Shyam KC (World Bank); Kevin Goh (Australian Agency for International Development); Robert Guild (Asian Development Bank); Scott Hook (Pacific Islands Forum Secretariat); Kosi Latu (Secretariat of the Pacific Regional Environment Programme); and Jay Roop (Asian Development Bank).

Special acknowledgement is due to the organizations that supported the World Bank in the dissemination of this note, particularly the Secretariat of the Pacific Community and the Secretariat of the Pacific Regional Environmental Programme.

We acknowledge the financial support of the partners of the Global Facility for Disaster Reduction and Recovery. Anne Himmelfarb edited the report and Miki Fernandez assisted with the design. Rachel Cipryk and Nathan Hale (World Bank) provided support throughout, and Aleta Moriarty and Laura Keenan (World Bank) provided advice on the communication and dissemination strategy.



Photo: Carlo Iacovino

# List of Abbreviations

<b>CCA</b>	Climate change adaptation
<b>DRR</b>	Disaster risk reduction
<b>GDP</b>	Gross domestic product
<b>HFA</b>	Hyogo Framework for Action
<b>JNAP</b>	Joint National Action Plan
<b>MDG</b>	Millennium Development Goal
<b>M&amp;E</b>	Monitoring and evaluation
<b>NAP</b>	National Action Plan
<b>NAPA</b>	National Adaptation Programme of Action
<b>NGO</b>	nongovernmental organization
<b>PCRAFI</b>	Pacific Catastrophe Risk Assessment and Financing Initiative
<b>PICT</b>	Pacific island country and territory
<b>PIFS</b>	Pacific Island Forum Secretariat
<b>SPC</b>	Secretariat of the Pacific Community
<b>SPREP</b>	Secretariat of the Pacific Regional Environment Programme
<b>UNDP</b>	United Nations Development Programme

# Executive Summary

Pacific island countries continue to be among the most vulnerable in the world: they combine high exposure to frequent and damaging natural hazards with low capacity to manage the resulting risks. Their vulnerability is exacerbated by poorly planned socioeconomic development, which has increased exposure and disaster losses, and by climate change, which has increased the magnitude of cyclones, droughts, and flooding.

Changes in how disasters and other extreme events in the Pacific are managed could significantly lessen the region's vulnerability. Currently, inefficient management of risks negates development gains and incurs large costs for national and local governments. Progress in reducing vulnerability has been retarded in part because of fundamental problems with coordination and cooperation among relevant actors at all levels. The policy frameworks, governments, regional organizations, and donor and development institutions responsible for carrying out disaster risk reduction (DRR) and climate change adaptation (CCA) often work in isolation from one another—and in isolation from the actors involved in socioeconomic development planning and implementation. Progress has also suffered because elected officials, as well as donors and other development partners, tend to support immediate-term relief following a disaster rather than investing in DRR and CCA initiatives, which have less visibility but would in the long run represent a far more efficient use of resources.

Merely managing the *symptoms* of disasters and climate change, as Pacific island countries and territories (PICTs) commonly do, is inefficient, expensive, and not sustainable. A better approach would address the *causes* of vulnerability and work to promote climate- and disaster-resilient development. Such an approach is achievable if certain changes are made: risk considerations must be integrated in the formulation and implementation of social and economic development policies and plans; political authority, leadership, and accountability must be more robust and effective; and coordination and cooperation among actors must be increased.

**Audience and purpose.** This Policy and Practice Note grows out of extensive consultations with countries, regional organizations, and donors and other development partners, and it is addressed primarily to high-level policymakers and decision makers within them. Its analysis and recommendations are meant to inform DRR and CCA planning across a range of institutions at all levels. Specifically, they are intended to inform the design and implementation of the joint Roadmap towards a Post 2015 Integrated Regional Strategy for Disaster Risk Management and Climate Change Adaptation and Mitigation, as well as preparation of an implementation strategy for integrating DRR and CCA across the World Bank's development operations in the Pacific.

**The consequences of not acting today.** If countries and donors do not act now to reduce PICTs' extremely high vulnerability—above all, if development planning does not begin to assess hazard risks and integrate risk considerations—the consequences are likely to be serious indeed. Simply put, a “business as usual” approach focused on immediate disaster relief rather than long-term DRR and CCA will increase economic and human losses, slow economic growth, and delay or even set back progress toward Millennium Development Goals.



Photo: Thinkstock.com

**Pacific island countries continue to be among the most vulnerable in the world: they combine high exposure to frequent and damaging natural hazards with low capacity to manage the resulting risks.**

**Lessons of the last decade.** Over the last decade, some important lessons have emerged about what works, and what does not work, to reduce vulnerability. It is clear now that project-based DRR and CCA initiatives with relatively short time frames encourage fragmented efforts, inhibit carryover across initiatives, and ultimately do little to reduce underlying vulnerability in a lasting way. It is also clear that weak coordination and partnership between institutions involved with implementing DRR, CCA, and development limit the impact of these interventions, and that the institutional rigidity of donor organizations makes cooperation and partnership more difficult. Finally, experience shows that reducing vulnerability requires stronger political leadership, end-user-friendly information, and improved monitoring and evaluation. These will ensure that DRR and CCA considerations are mainstreamed in development plans and included in budgets, that well-designed DRR and CCA initiatives are delivered efficiently, and that leaders make informed decisions.

**The way forward: Overcoming remaining barriers and fostering resilient development.** The lessons of the past decade teach us that climate- and disaster-resilient development is possible if

- risk considerations are grounded in development;
- political authority, leadership, and accountability are robust and effective; and
- coordination and partnerships are strong.

**To ground risk considerations in development,** governments and partners should, among other key initiatives, ensure that climate and disaster data are easy to access and inform the selection of priority investments and development programs. They should also give precedence to development initiatives that reduce vulnerability and adapt existing tools (such as land use plans, building codes, and environmental regulations) to achieve higher resilience to all hazards.

**To achieve robust and effective political authority, leadership, and accountability** for more resilient development, governments should anchor coordination of DRR and CCA in a high-level central ministry/body both at national and regional levels and ensure that leaders are knowledgeable about disaster and climate risk management. They should build on existing mechanisms such as strategic and corporate planning and budgetary processes, as well as proactively include communities, provincial governments, and central governments in the design and implementation of disaster- and climate-resilient investments.

**To promote strong coordination and partnerships,** countries and development partners need mutual trust, respect, and flexibility. With good working relationships, each partner's comparative advantage is optimized, adequate resourcing is ensured, and knowledge and implementation capacity are shared efficiently. Better cooperation between governments and donors would allow alignment of funding sources for CCA, DRR, and development, which would in turn promote flexible financing arrangements and allow current and anticipated risks to be addressed.

# 1

## The Consequences of Not Acting Today



### Key Messages

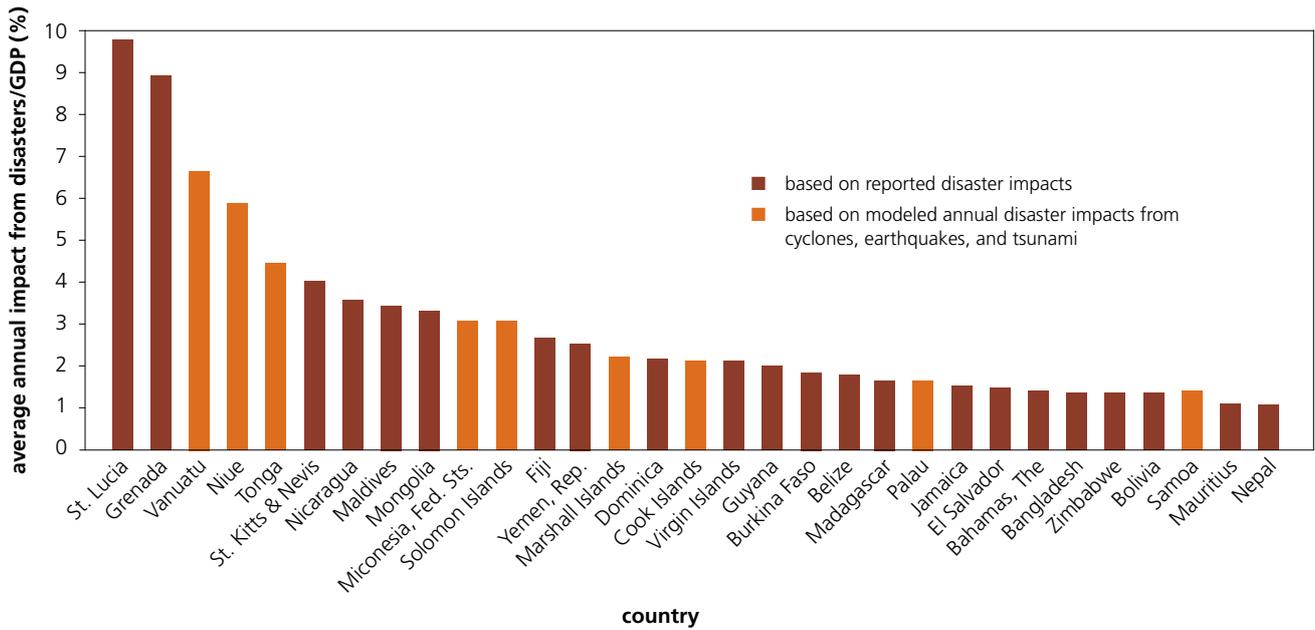
1. Unless development planning in Pacific island countries focuses on the need to assess hazard risks, these countries will remain among the most vulnerable in the world.
2. A “business as usual” approach to managing risks—one that focuses more on disaster relief than on long-term disaster risk reduction and climate change adaptation—will result in increased economic and human losses from extreme events.
3. A “business as usual” approach will slow economic growth and delay or even set back progress toward Millennium Development Goals.
4. The vulnerability of the poor and other marginalized groups will increase unless attention is paid to slow-onset and low-intensity climate and weather events as well as to extreme events.

Photo: The World Bank/Michael Bonte

**Although Pacific island countries are among the most vulnerable in the world to natural hazards, development planning has not sufficiently focused on the need to assess hazard risks.**

Of the 20 countries with the highest average annual disaster losses scaled by gross domestic product (GDP), 8 are Pacific island countries: Vanuatu, Niue, Tonga, the Federated States of Micronesia, the Solomon Islands, Fiji, the Marshall Islands, and the Cook Islands (figure 1).

The Pacific is experiencing the mounting consequences of an unfortunate combination of circumstances, in which poorly planned and implemented socioeconomic development initiatives increase already significant exposure to extreme weather and climate events.



**Figure 1. Average annual impacts from disasters as a percentage of GDP**

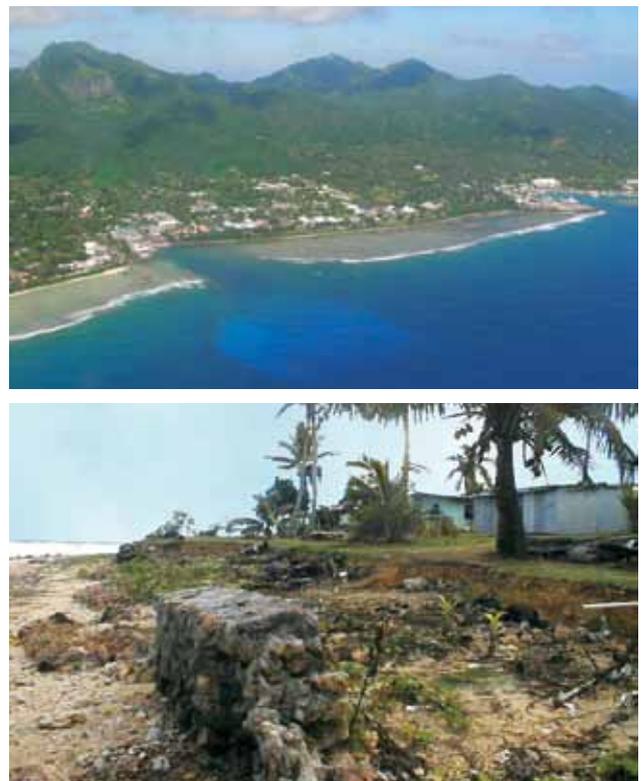
Sources: Reported disaster impacts are from World Bank and United Nations, *Natural Hazards, Unnatural Disasters: The Economics of Effective Prevention* (Washington, DC: International Bank for Reconstruction and Development and World Bank, 2010); modeled annual disaster impacts are from World Bank, *Pacific Catastrophe Risk Assessment and Financing Initiative, Risk Assessment—Summary Report* (Washington, DC: World Bank, forthcoming).

For example:

- In many Pacific Island Countries and Territories (PICTs), infrastructure and other assets are increasingly concentrated dangerously close to the coast, rather than being more dispersed and set back from exposed shorelines (figure 2a).
- Seawalls constructed on the island of Moturiki, Fiji, have generally exacerbated the shoreline erosion they were designed to reduce, and removing the previously cleared mangrove fringe as soon as it shows signs of regrowth has prolonged the heightened vulnerability arising from clearance (figure 2b).<sup>1</sup>

The already high frequency of some extreme weather and climate events may be increasing in the Pacific.<sup>2,3</sup> These increases are likely to continue because of global warming, although the precise nature of the relationship between global warming and extreme event increases remains uncertain.<sup>4</sup>

Nothing can be done about the extreme events themselves, at least in the short term. But as this document will show, changes to the way development policy is planned and carried out in the region would reduce such events’ consequences.



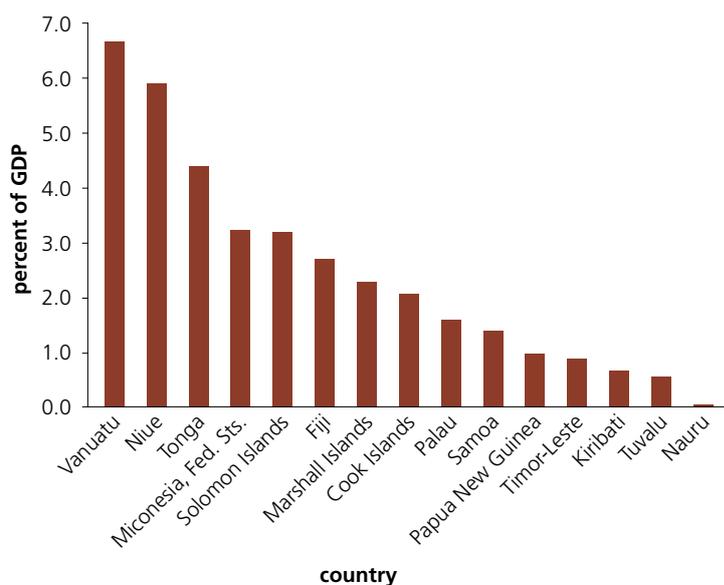
**Figure 2 (a) Left:** Most infrastructure related to government, commerce, and transportation continues to be concentrated on the highly vulnerable north coast of Rarotonga, Cook Islands (photo courtesy of Helen Henry); **(b) Right:** Remains of a typical rural seawall in Fiji. The original seawall remained intact for 18 months, then collapsed; it was subsequently partially rebuilt and then collapsed again (photo courtesy of Patrick Nunn).

### Economic and human losses from extreme events are enormous and will increase under a “business as usual” approach.

Since 1950 extreme events have affected approximately 9.2 million people in the Pacific region: they have caused 9,811 reported deaths and damage of around US\$3.2 billion, with tropical cyclones the major cause for this loss and damage. Figure 3 shows annual average economic losses suffered by Pacific island countries as a result of damage caused by tropical cyclones, earthquakes, and tsunamis.<sup>5</sup>

In the last decade, some PICTs have experienced natural disaster losses that in any single year have approached and in cases even exceeded their GDP. Examples include the 2007 earthquake and tsunami in the Solomon Islands, which caused losses of around 90 percent of the 2006 recurrent government budget;<sup>6</sup> the 2004 Cyclone Heta on Niue, where immediate losses amounted to over five times the 2003 GDP;<sup>7</sup> and the 2009 Fiji floods, which affected Nadi, Ba, and the entire sugar belt area and which caused losses of F\$350 million.<sup>8</sup>

The total value of infrastructure, buildings, and cash crops considered at some level of risk is estimated at over **US\$112 billion** (table 1). Inaction could prove extremely expensive and will only grow more expensive in the future.



**Figure 3. Economic losses due to tropical cyclones, earthquakes, and tsunamis.**

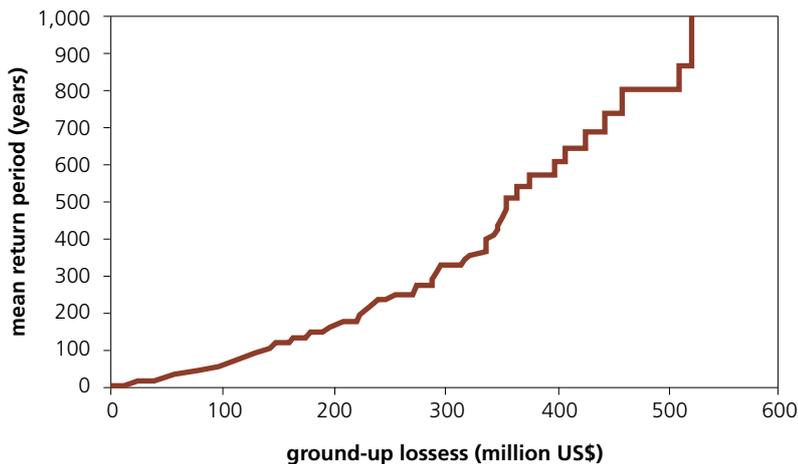
Source: World Bank, Pacific Catastrophe Risk Assessment and Financing Initiative, Risk Assessment—Summary Report (Washington, DC: World Bank, forthcoming).

The case of Samoa provides a striking example of how losses can escalate rapidly due to extreme events and the effects of climate change (figure 4). Though the precise influence of climate change on weather variability and extreme events remains uncertain,

**Table 1. Asset replacement costs and economic losses due to tropical cyclone, earthquake, and tsunami**

Country	Assets replacement cost US\$ million	Annual average economic losses		Losses from 100-Year event	
		US\$ million	% GDP	US\$ million	% GDP
Cook Islands	1,422	4.9	2.0	103.0	42.2
Fiji	22,175	79.1	2.6	844.8	28.1
Micronesia, Fed. Sts.	2,048	8.3	2.9	150.7	52.4
Kiribati	1,182	0.3	0.2	4.0	2.6
Marshall Islands	1,696	3.1	2.0	67.4	43.3
Nauru	453	0.00	0.00	0.00	0.00
Niue	249	0.9	5.8	22.7	143.4
Palau	1,501	2.7	1.6	46.7	27.5
Papua New Guinea	49,209	85.0	0.9	794.9	8.4
Samoa	2,611	9.9	1.7	152.9	27.0
Solomon Islands	3,491	20.5	3.0	280.6	41.4
Timor-Leste	20,145	5.9	0.8	143.7	20.5
Tonga	2,817	15.5	4.3	225.3	63.0
Tuvalu	270	0.2	0.8	4.8	15.1
Vanuatu	3,334	47.9	6.6	370.1	50.8
<b>TOTAL</b>	<b>112,602</b>	<b>284.2</b>		<b>3211.6</b>	

Source: World Bank, Pacific Catastrophe Risk Assessment and Financing Initiative, Country Risk Profiles (Washington, DC: World Bank, 2011).



**Figure 4. Relationship between the frequency of an extreme event (as defined by the mean return period) and the resulting losses. Data are for Samoa.**

Source: World Bank, *Pacific Catastrophe Risk Assessment and Financing Initiative*, Country Risk Profile: Samoa (Washington, DC: World Bank, 2011).

a World Bank study of CCA in Samoa drew two inferences. The first is that the severity—and perhaps the frequency—of El Niño Southern Oscillation droughts is likely to increase. The second is that the severity (wind speeds) of major cyclones may increase, while the return period for the most damaging cyclones may fall, leading to a significant increase in the average damage caused by cyclones that hit Samoa.<sup>9</sup> A macroeconomic model of the interactions between climate and the Samoan economy suggests that, without additional adaptation, the present value of the climate change–induced damage to the economy through 2050 could be between US\$104 and US\$212 million. This is equivalent to between 0.6 and 1.3 percent of the present value of Samoan GDP over the same period. Importantly, the model assumes that sound development policies will be in place and implemented to minimize the impact of existing weather risks and other natural hazards, along with those from climate change.

It is also important to consider the more direct human consequences of extreme events. Between 1970 and 2007, Fiji experienced 41 documented flood events, which affected at least 220,000 people and killed 88.<sup>10</sup> The tsunami that wreaked havoc on Samoa in September 2009 resulted in 155 deaths, the destruction of the homes of some 5,300 people (2.5 percent of the population) and several coastal villages, and the loss of 20 percent of hotel rooms (which could seriously harm the livelihoods of those in the tourism industry).

Significantly, this devastation prompted almost no national budget adjustment in Samoa, mainly because donors stepped in with assistance amounting to around 12 percent of Samoa’s GDP. The extent to which governments tend to count on donors to offset direct economic losses after a disaster—and the implications of this expectation for efforts to address the region’s vulnerability—are discussed below. It is

worth noting here that the tsunami recovery plan, which was founded on the principle of “build back better,” does provide a coherent response to both tsunami risks and climate change. It is estimated to cost just over US\$100 million, shared between the public sector and donor assistance.

#### **Lower-intensity natural hazards and climate effects also cause social and economic hardship in the Pacific.**

In many Pacific countries, the accumulated impacts of small and medium-size events are equivalent to, or exceed, those of single large disasters. Low-intensity events are typically more widespread, affecting a comparatively large number of people. They are also likely to involve damage to housing, land, and local infrastructure, rather than major mortality or destruction of economic assets.<sup>11</sup> As the poor and other vulnerable, marginalized groups tend to live in more hazard-prone areas,<sup>12</sup> increases in the frequency of these lower-intensity hazards have a large impact on poverty. Even PICTs such as Kiribati, which are situated outside the region of tropical cyclone occurrence and hence experience relatively low economic losses as a result of cyclones (table 1), are nevertheless considered highly vulnerable to the impacts of climate change.

Data on low-intensity events are not collected systematically in many PICTs and are sometimes not collected at all. Conducting a cost-benefit analysis of efforts to address drought risks in Tuvalu, for example, was thwarted by the lack of data on the economic and social consequences of its previous droughts.

#### **Disaster- and climate-related losses are managed inefficiently: the focus by elected officials and donors on immediate relief tends to discourage investment in long-term DRR**

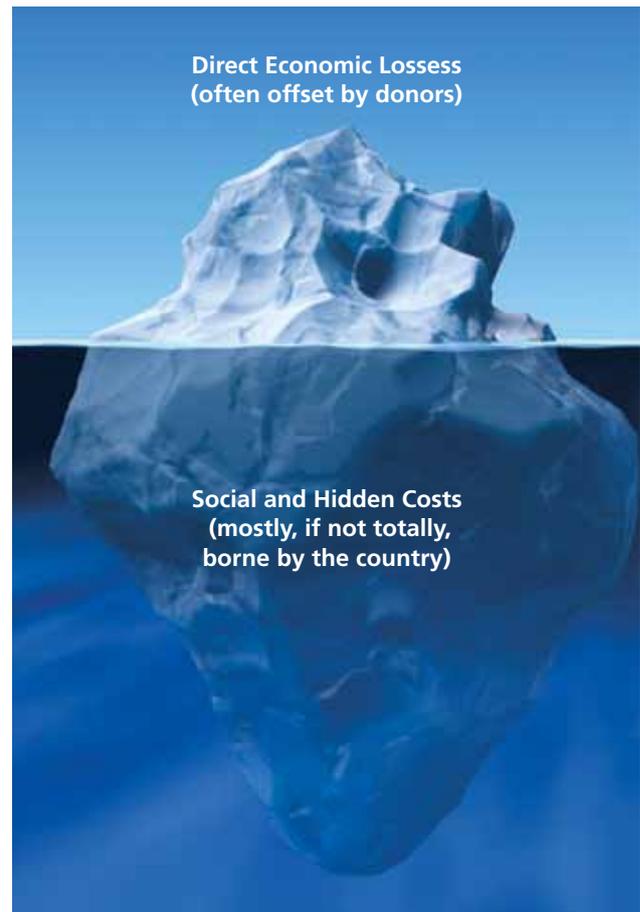
**and CCA efforts, which in turn slows economic growth and progress toward Millennium Development Goals.**

The social and economic consequences of natural disasters and climate change fall into two broad categories (figure 5). In the Pacific, the two sets of consequences are managed differently from one another—and often inefficiently:

- **Direct economic losses.** Evidence shows that currently, although the amount of these losses is known and their effect anticipated, direct economic losses are largely offset by donors and other development partners. This was the case for recent cyclones, flooding, and tsunami affecting some PICTs. This arrangement reduces a country's incentive to be proactive and invest its own resources in DRR and CCA initiatives designed to avoid or reduce these losses. It also means that donors are spending large amounts of money on relief and recovery, rather than on sustainable development.
- **Social and other hidden costs.** While losses such as injuries and deaths are well documented, this is not true for some other significant social costs, such as increased illness, work and school days lost, and assistance of volunteers. Nor is there good documentation of smaller and indirect economic losses, including loss of subsistence crops, reduced transport links, and reduced access to services. Opportunity costs, too, are rarely documented. Examples of these include loss of income due to the decline in tourism following an extreme event, and the unwillingness of rural communities to grow cash crops because of frequent damage by cyclones and flooding. All these costs, whether documented or hidden, are generally an internal burden on a country. If they are large, they can manifest as a significant slowdown in economic growth, and they can also set back development more broadly, including achievement of Millennium Development Goals (MDGs).

**Acting today to reduce the consequences of future extreme events can be cost-effective.**

Benefit-cost analyses suggest that investing in DRR and CCA is sound policy. Collecting weather and climate data and generating forecasts, for example, is costly, but the benefits can be considerable: weather-related information and forecasts help farmers decide when to plant, sow, fertilize, and harvest; guide tourism operators in which activities to schedule; and enable electric utilities to anticipate and respond to demand



**Figure 5.** Countries tend to focus on direct economic losses, many of which are offset by donors; social and hidden costs are often larger if their impact on the national economy is taken into account. These costs are seldom offset by donors.

fluctuations. Benefit-cost ratios as high as 44 have already been demonstrated in the Pacific:

- A benefit-cost ratio of at least 2 was found as a consequence of reduced repair and maintenance costs over the nominal 50-year life of the main road in Kosrae. The lower costs resulted from investments by the State of Kosrae in climate-proofing a new 6.6 kilometer section of the road.<sup>13</sup>
- Benefit-cost ratios of between 1 and 44 were found for several community-based adaptation initiatives designed to alleviate flooding in Fiji and Samoa.<sup>14</sup>

An overall consequence of not acting today to reduce disaster risks and the threat of climate change will be further delays in achieving MDGs or—worse—backsliding from goals that have already been achieved. Table 2 summarizes the sensitivities of MDG performance to climate change and disasters. Significantly, performance in the Pacific is poorest for MDG 1 (to eradicate extreme poverty and hunger). MDG 1 is judged to be the goal most adversely

**Table 2.** Links between the Millennium Development Goals and climate change and disasters in the Pacific

Goal	Sensitivity of goal to climate change and disasters	PICTs' MDG performance		Potential for CCA and DRR to improve performance
		Number of countries		
		On track	Off track	
<b>Goal 1:</b> Eradicate extreme poverty and hunger	H	2	6	H
<b>Goal 2:</b> Achieve universal primary education	M	7	2	M
<b>Goal 3:</b> Promote gender equality and empower women	M	3	3	M
<b>Goal 4:</b> Reduce child mortality	M	9	3	M
<b>Goal 5:</b> Improve maternal health	M	7	7	M
<b>Goal 6:</b> Combat HIV/AIDS, malaria, and other diseases	M	5	1	H
<b>Goal 7:</b> Ensure environmental sustainability	H	5	5	H
<b>Goal 8:</b> Develop a global partnership for development	H	6	1	H

Source: Pacific Islands Forum Secretariat (PIFS), Pacific Regional MDGs Tracking Report (Suva: PIFS, 2011), and authors.

Note: H = high; M = medium. A grade of "low" was available but not given. PICTs' MDG performance above is based on two of four progress classifications used by PIFS: 'On track' and 'off track'. It does not report 'mixed' progress or where there is 'insufficient information' to assess progress. For this reason the totals are not always the same.

affected by climate change and disasters. CCA and DRR can do much to reduce this sensitivity and hence ensure that efforts made by countries and their partners to reduce poverty and hunger are not counteracted. The level of achievement is somewhat better for MDG 6 (to combat HIV/AIDS, malaria, and other diseases). Nevertheless, in the Pacific region there are 6.7 million cases of acute diarrhea every year. Of these cases, 2,800 result in death, mostly among children under age five.<sup>15</sup>

The root causes of failure to achieve the MDG targets, including poor governance, weak institutional arrangements, shortages in human and financial resources, lack of political will and stability, poor accountability and transparency, and inadequate natural resources management, decrease the resilience of PICTs and communities to climate change and natural disasters. Thus climate change and natural disasters will further impede progress toward the MDGs.

# 2

## Lessons of the Last Decade



Photo: Cyril Jazbec

### Key Messages

1. Project-based DRR and CCA initiatives with relatively short time frames encourage fragmented efforts, inhibit carryover across initiatives, and ultimately do little to reduce underlying vulnerability in a lasting way.
2. Weak coordination and partnership between institutions involved with DRR, CCA, and development limit the impact of interventions, and the institutional rigidity of donor organizations can make cooperation and partnership even more difficult.
3. Reducing vulnerability requires stronger political leadership, improved monitoring and evaluation, and end-user-friendly information; these will ensure that DRR and CCA considerations are mainstreamed in development plans and included in budgets, that well-designed DRR and CCA initiatives are delivered efficiently, and that leaders make informed decisions.

### Progress in addressing underlying vulnerability in the Pacific has thus far had limited impact on climate-resilient development.

In the last decade some progress has been made in implementing DRR and CCA measures on the ground. Among key achievements are these:

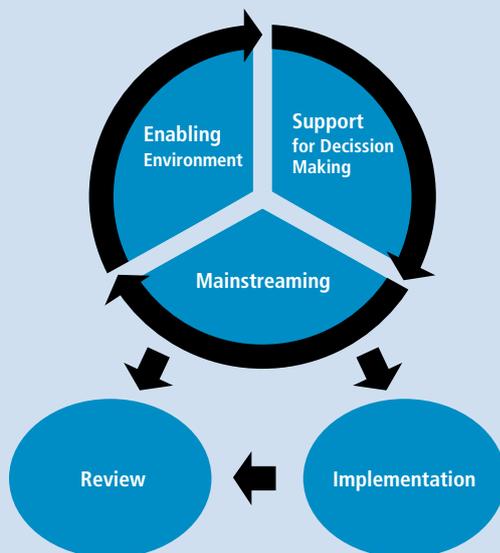
- Investment in DRR and CCA has grown.
- Institutions involved in DRR and CCA have been strengthened.
- Integration of DRR and CCA policies and plans has increased, evident in the Joint National Action Plans (JNAPs) for DRR and CCA.
- Some mainstreaming of DRR and CCA has occurred at the sector level.
- Implementation of DRR and CCA initiatives has increased at the community level.
- Comprehensive data sets and tools that assess disaster, climate, and fiscal risk have been developed or identified.

It remains true, however, that progress has had limited impact. This section discusses the achievements and lessons of the last decade to understand why more progress has not been made, and to identify solid foundations on which to build and move forward. Underpinning the discussion throughout is the five-part framework articulated in the 2006 Policy Note “Not If, But When” (box 1).

**Box 1. A framework for effective management of disaster and climate risks**



Five elements (figure 6) make up the framework for effective management of disaster and climate risks: 1) an enabling environment at all levels; 2) support for decision making (through increased public awareness, targeted information, and relevant tools and training); 3) mainstreaming of CCA and DRR initiatives in key economic and social planning processes; 4) implementation of initiatives; and 5) ongoing review of initiatives to ensure that goals are being met and that lessons learned are documented.



**Figure 6. Five key components of a framework for effectively managing disaster and climate risks.**

Source: Adapted from World Bank, "Not If, But When: Adapting to Natural Hazards in the Pacific Islands Region," Policy Note, East Asia and Pacific Region, 2006, <http://siteresources.worldbank.org/INTPACIFICISLANDS/Resources/Natural-Hazards-report.pdf>.

**A project-based approach to DRR and CCA encourages fragmented efforts and impedes progress.**

DRR and CCA initiatives in the Pacific commenced in the late 1990s; the number of projects being implemented has increased significantly since 2007 (figure 7).

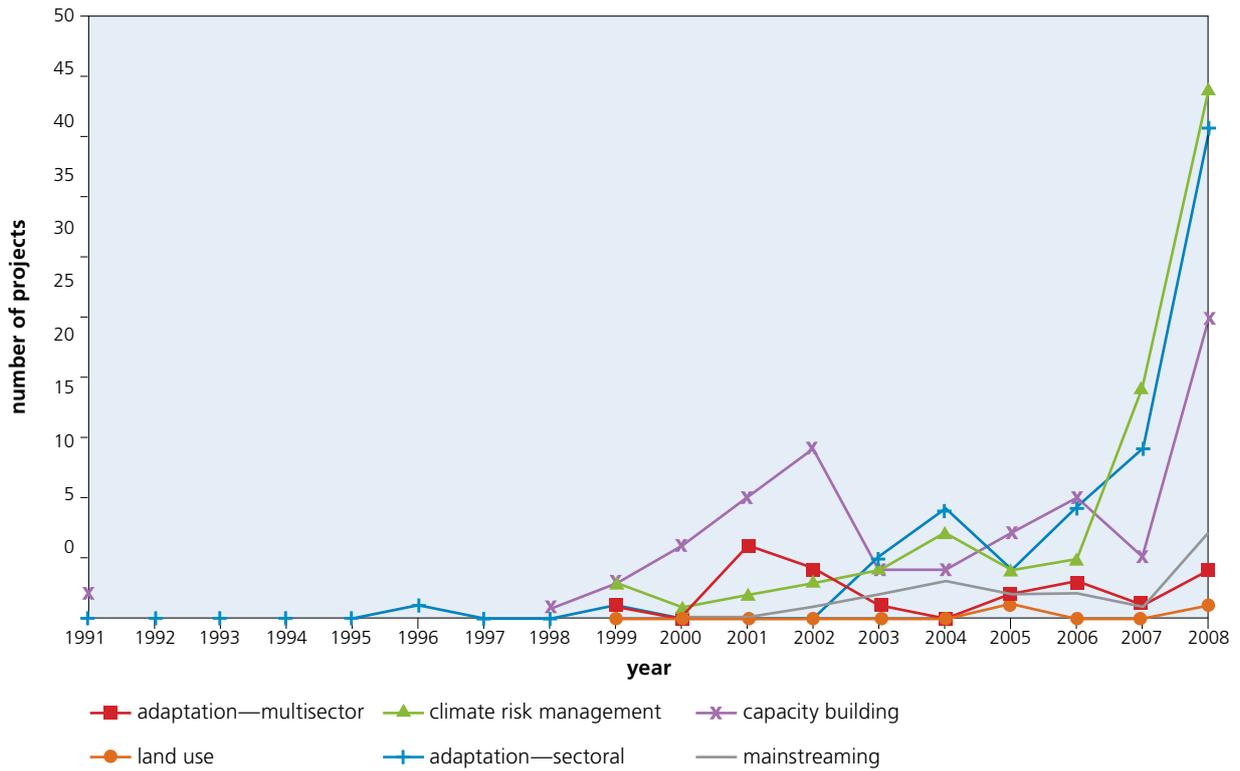
This increase has not translated into greater progress toward reducing vulnerability, however. A key problem is that current interventions are typically project based. This means that initiatives tend to have short time frames and that there is little carryover from one project to the next. It also means that projects are generally identified as either DRR or CCA, when—given the overlap in what the two types of interventions seek to achieve—the two should be seen as part of a continuum from hazard focused to development focused (figure 8). Consolidating and streamlining the many discrete projects would encourage progress and discourage fragmentation of effort.

**Weak coordination and partnership between institutions involved with DRR, CCA, and development limit the impact of interventions; donor organizations' institutional rigidity contributes to this problem by making cooperation and partnership more difficult.**

A second key reason that CCA and DRR efforts have not had more impact is that organizational links and cooperation among the various projects and programs are too limited, both at the national and at the regional level. Joint programming of CCA and DRR activities by donors and implementing agencies is not widespread. The lack of strong links risks duplication, limits learning, and makes it difficult to achieve the holistic and multisectoral response that resilient development requires.

Donor funding requirements also contribute to this problem. For example, rigid criteria and agency-specific reporting requirements discourage alignment and integration as funds are often earmarked separately and specifically for either DRR or CCA or development. The disjointed global processes of the United Nations Framework Convention on Climate Change for CCA and the Hyogo Framework for Action (HFA) for DRR force and perpetuate this division.

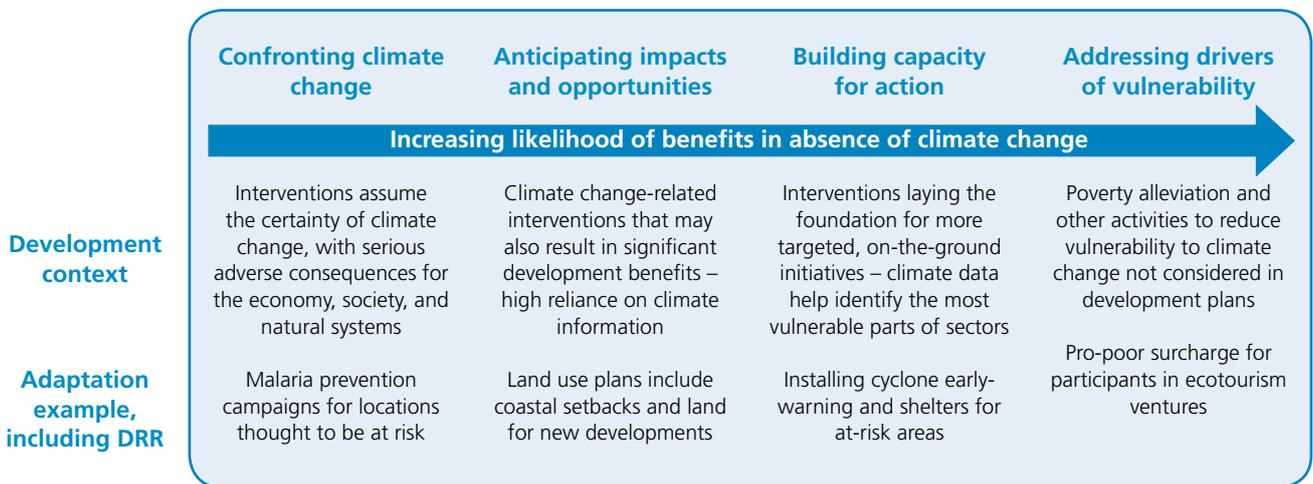
Donors' institutional rigidity also reinforces "silo effects" in government institutional structures and approaches, and perpetuates fragmentation and duplication of effort. Because donors may prefer



**Figure 7. Number of CCA and DRR projects implemented in PICTs, 1991–2008.**

Source: Adapted from J. E. Hay, *Assessment of Implementation of the Pacific Islands Framework for Action on Climate Change (PIFACC). Report to the Secretariat for the Pacific Regional Environment Programme (SPREP)* (Apia, Samoa, 2009).

Note: some trend lines do not start in 1991 since most CCA and DRR projects began implementation following 1998



**Figure 8. Responses to climate change, from development focused (left) to climate change focused (right), with illustrative examples.**

Source: Adapted from S. Becken and J. E. Hay, *Climate Change and Tourism: From Policy to Practice* (UK: Routledge/Taylor and Francis, 2012).

high-visibility projects, their assistance is often concentrated on funding “hard” measures, such as coastal protection projects and water tanks. They tend to focus less on ensuring support of “softer” measures, such as institutional strengthening and ecosystem-based solutions, or on the longer-term,

ongoing capacity building required for country ownership and implementation of DRR and CCA.

Currently, DRR, CCA, and development largely operate as three distinct communities of practice in the Pacific. The last five years have seen the

### Why is progress toward reducing vulnerability inadequate?

1. **Initiatives are project based.** Short time frames and rigid categorization (as either DRR or CCA) mean little carryover from one project to the next.
2. **Links between projects and programs, both at the national and regional levels, are limited.** Joint programming of CCA and DRR activities by donors and implementing agencies is not widespread. The lack of strong links risks duplication, limiting learning, and makes it difficult to achieve the holistic and multisectoral response that resilient development requires.

appearance of a plethora of DRR, CCA, and development sector policy and planning instruments at national and regional levels. This includes three regional policies for DRR, CCA, and national development as well as National Action Plans for Disaster Risk Management (NAPs) and National Adaptation Programmes of Action (NAPAs). A more recent initiative is Joint National Action Plans for DRR and CCA (JNAPs). These policy instruments have been influenced by various guidelines produced in the Pacific for mainstreaming DRR and CCA into development. While each initiative is well intended and reflects substantial thought and effort, greater cooperation among the three communities (DRR, CCA, and development) and greater integration of their instruments would undoubtedly use available resources more efficiently and produce more effective and lasting improvements.

**Improved coordination and alignment between existing DRR and CCA institutions, and greater involvement by relevant ministries (in particular Finance and Economic Planning), would make CCA and DRR into economy-wide and development-wide issues and would facilitate effective whole-of-government and regional approaches.**

Improved coordination and alignment between DRR and CCA institutions and planning instruments is crucial. It is now occurring in some PICTs such as the Cook Islands, Tonga, Vanuatu, Tuvalu, the Marshall Islands, and Niue. Other countries are poised to pre-

pare joint DRR/CCA national action plans. However, DRR and CCA considerations are rarely incorporated into economic or physical planning. To date, central ministries such as Finance and Economic Planning have not played a principal role in DRR and CCA, which is problematic given their mandate for overseeing and coordinating national development, financing, and aid effectiveness. Improved coordination is needed to allow technical line ministries involved in DRR and CCA to concentrate more on the services that they are mandated, and have the capacity and comparative advantage, to deliver.

At the regional level there have been recent expressions of intent to integrate DRR and CCA through the implementation of a joint Roadmap towards a Post 2015 Integrated Regional Strategy for Disaster Risk Management and Climate Change Adaptation and Mitigation. This approach would go a long way to redress the current arrangements, which mandate that DRR and CCA be facilitated separately by the Secretariat of the Pacific Community (SPC) and Secretariat of the Pacific Regional Environment Programme (SPREP), respectively. However, the integration of DRR and CCA within regional economic development, which is in the remit of the Pacific Islands Forum Secretariat (PIFS), is less advanced.

### A recent institutional policy analysis of CCA and DRR, in the Pacific came to these conclusions:

1. Few regional institutions in the Pacific would be capable of providing tangible support to national and local DRR and CCA efforts in the absence of donor assistance.
2. Institutional fragmentation is resulting in considerable inefficiencies in the use of the limited financial and other resources.
3. Most PICT governments and administrations are structured along sectoral lines, which makes it difficult for them to address the intersectoral and integrated approaches that are needed to make development climate resilient.

*Source: United Nations International Strategy for Disaster Reduction (UNISDR) and United Nations Development Programme (UNDP), *Disaster Risk Reduction and Climate Change Adaptation in the Pacific: An Institutional and Policy Analysis* (Suva, Fiji: UNISDR and UNDP, 2012).*

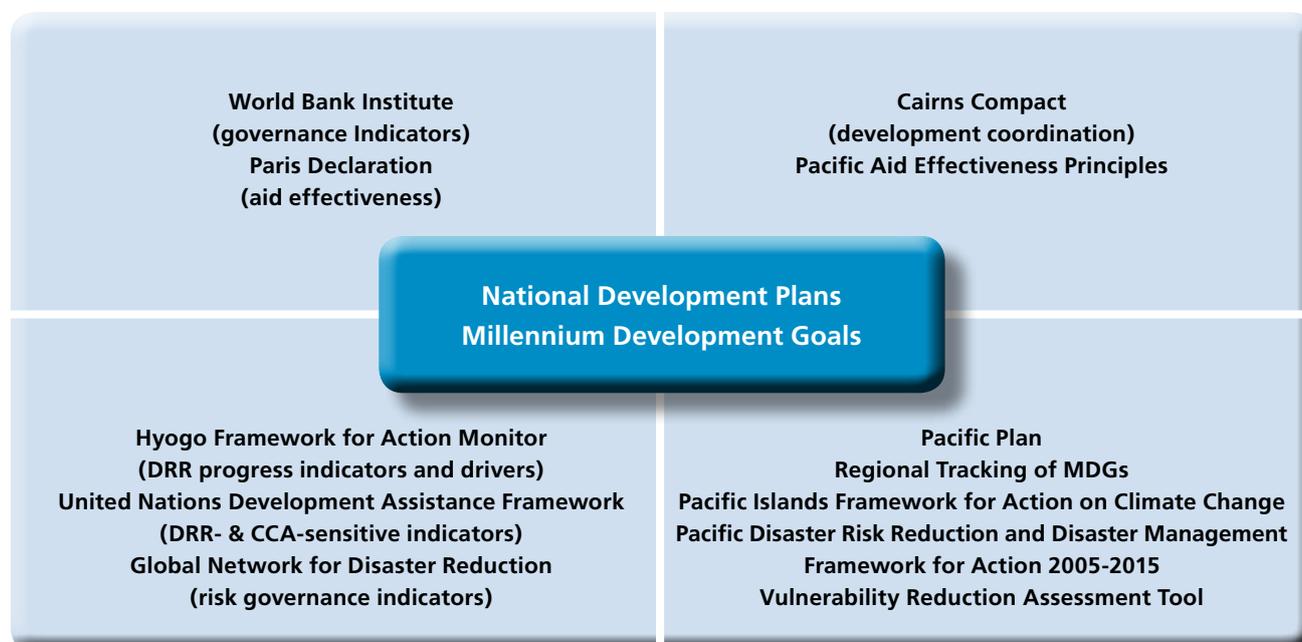
The need for greater coordination and coherence extends to other DRR, CCA, and development actors such as international financing institutions, multilateral and bilateral development partners, alliances and networks, nongovernmental organizations (NGOs), and civil society organizations. Effective coordination is of particular importance given the critical issue of limited absorptive capacity in PICTs and their communities, a fact that NGOs in the Pacific are beginning to recognize. Some have established coordination positions within their organizations, and there is some movement toward forming consortiums between NGOs. Donors have made less progress in coordinating financing for DRR and CCA, although some initiatives aimed at coordination have been established, such as the Development Partners for Climate Change meetings organized by the United Nations Development Programme (UNDP). Progress has also been made in other sectors, for example in the Pacific Regional Infrastructure Facility, which facilitates donor coordination in the infrastructure sector.

**Stronger political leadership would facilitate needed inclusion of DRR and CCA considerations in national and subnational budgetary processes.**

A substantial number of NAPs and NAPAs now say they consider DRR and CCA an integral part of devel-

opment planning and implementation, and recognize its importance in national development strategies and in relevant sector policies and plans. There has been considerable progress in addressing *some* priorities in *some* NAPs and NAPAs; and *some* countries, such as the Cook Islands and Papua New Guinea, have included *some* consideration of CCA and DRR in budgetary processes. However, most NAPs, NAPAs, and JNAPs fall short of their intended mainstreaming function in that budgetary allocations at the sector level generally do not reflect DRR and CCA.

Stronger political authority and leadership is necessary to root DRR and CCA in regional debates on development and economy. Because DRR and CCA lack political visibility at the regional level, PICTS cannot reap the full benefits that would accrue from mainstreaming DRR and CCA across the regional development agenda. The PIFS has recently taken a lead advisory role to PICTs in the important matter of accessing and managing climate change financing, but it does not yet have the support it would need to take on the role of raising the political visibility of DRR and CCA at the regional level in order to promote resilient development. It is worth looking to DRR/CCA practice in other regions, such as risk governance and risk financing in the Caribbean, to identify approaches and options that could hold merit for the Pacific islands region.



**Figure 9.** Selected development, DRR, and CCA monitoring, evaluation, and reporting instruments that have been prepared for use at international, regional, and local levels; these offer starting points for designing an appropriate approach to measuring progress of integrated CCA and DRR in development.

**End-user-friendly information is necessary for informed leadership and sound decision making as well as for the technical design and delivery of resilient development initiatives.**

Appropriate, rigorous, and targeted information can help avoid maladaptation. Over the last five years considerable advances have been made in the development of comprehensive databases and tools that assess disaster, climate, and fiscal risk. These include the Pacific Catastrophe Risk Assessment and Financing Initiative (PCRAFI), the Pacific Sea Level and Climate Monitoring Project, and the Pacific Climate Change Science Programme. To avoid maladaptation, these programs need to develop products and applications that are directly targeted to the needs of end-users in PICTs.

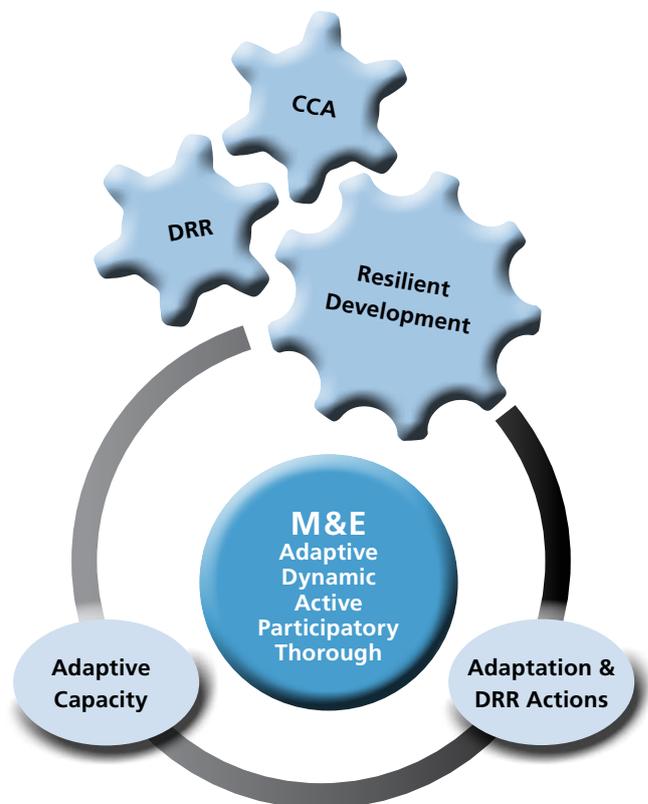
Considerable progress has been made in developing and applying approaches and tools to support integrated DRR and CCA decision making at the community level in the Pacific. Increasingly, disaster and climate risk information is being provided to communities in a way that is relevant to socioeconomic, livelihood, and cultural contexts and complementary to indigenous knowledge. Accessibility of appropriate information products and services is vital, since communities are at the front line of disaster and climate change impacts. Recent increases in coordination between NGOs should help to encourage tools' consistency and quality.

**Improved monitoring and evaluation is essential to enhance the capacity of organizations and leaders to make better DRR, CCA, and development decisions in the future.**

Several current monitoring and evaluation frameworks provide solid starting points for approaches to measuring progress in achieving resilient development (figure 9). The long-term intended outcome of CCA and DRR is reduced vulnerability. Thus many of the existing monitoring and evaluation frameworks for

development contain highly relevant proxy indicators of resilient development. However, many of the existing national or regional development and sector policies and frameworks focus on monitoring and evaluating inputs and outputs, rather than outcomes and the longer-term impacts that are much more relevant to measuring results and effectiveness.

Experience to date with monitoring and evaluation frameworks for CCA and DRR shows that there is a need to incorporate both qualitative and quantitative indicators that embrace principles of flexibility, learning, and participation (figure 10).



**Figure 10. A conceptual monitoring and evaluation (M&E) approach that measures progress at the CCA-DRR-development interface and incorporates principles of flexibility, learning, and participation.**

Source: Authors.

# 3

## The Way Forward Overcoming Remaining Barriers



Photo: Simpson Abraham, FSM PACC Project

### Key Messages

Critical barriers to achieving climate- and disaster-resilient development can be overcome if

- risk considerations are grounded in development;
- political authority, leadership, and accountability are robust and effective; and
- coordination and partnerships are strong.

Pacific regional DRR and CCA reports and reviews published over the past decade discuss a litany of recurring challenges that obstruct efforts both to integrate DRR and CCA initiatives and to incorporate DRR and CCA considerations at all levels of development. The barriers discussed in this section are the main obstacles to addressing these ongoing challenges. Until these barriers are overcome and the three key requirements for resilient development (figure 11) are met, resilient development will remain out of reach for most countries and their people, with progress limited and results patchy at best, and with vulnerability increased at worst.



**Figure 11.** Key requirements for climate- and disaster-resilient development.

Source: Authors.

**Resilient development requires grounding risk considerations in development.**

Current governance arrangements at the regional level, and in most countries, do not easily facilitate the integration of risk considerations into development. The separate institutional, legal, and policy frameworks for CCA and DRR are counterproductive. These frameworks also have weak and often tenuous links with the development sectors. Both these separations serve to diffuse efforts to integrate DRR and CCA and to mainstream them in development planning and processes. It is easy for the very case for integration and mainstreaming to get lost amid these separations. And without agreement among relevant actors that integration and mainstreaming are needed, it becomes difficult to add one more priority to a development agenda that is already crowded, complex, and competitive.

Separation also encourages inefficiency, since it tends to encourage planning, financing, programming, and implementing of stand-alone DRR and CCA projects at all levels. These self-contained initiatives are able to only nibble away at the periphery of DRR and CCA and are not fully integrated into development-planning, budgetary, and other processes.

At the highest levels, both the overarching Pacific Plan and national development policy frameworks need to commit political authority and commensurate levels of resources to a focus on the underlying drivers of disaster risk. Failure to do so will almost certainly winnow away any development gains thus far. Efforts

should concentrate on integrating risk considerations in development and ensuring meaningful integration of DRR and CCA interventions that focus on risk-sensitive development outcomes. An “outcomes focus” would help clarify the roles and responsibilities of various key actors and stakeholders based on their comparative advantages, and determine who should be involved in the delivery of DRR, CCA, and development outcomes. This clearer division of labor would facilitate appropriate institutional arrangements and provide lasting benefits. Important instruments and tools for this focus on outcomes are land use planning, building codes, environmental impact assessment, catchment and coastal zone management, and integrated water resources management.

**Resilient development requires sustained and robust political authority, leadership, and accountability.**

The political and economic imperatives for DRR and CCA are clear. Over the last decade PICTs have recognized these imperatives at international, regional, and national meetings. In spite of these public political commitments, in many PICTs the sustained effort needed to address DRR and CCA remains elusive. Short electoral timelines do little to encourage politicians to “invest today for a safer tomorrow.”<sup>16</sup> Only when they face a major disaster event within their term of office do politicians tend to focus on resilient development.

Donors, too, have little incentive to concentrate their efforts on long-term resilient development; responding to disasters irrespective of a country's efforts in DRR and CCA is highly visible and has high short-term impact. Donors and other actors are missing the opportunity arising from disasters to highlight the benefits of DRR. In the case of CCA, moreover, the high profile of climate change provides significant opportunity to mobilize political and financial resources for risk-smart development investment and to enhance and build resilience.

But without the strong will and commitment of leaders at all levels to make DRR and CCA a national development priority, DRR and CCA will remain invisible at the highest political levels. With strong leadership, politicians will be expected to include DRR and CCA considerations in development and be held accountable for the results.

Currently, leadership responsibility for DRR and CCA policy rests mainly with Departments of Disaster Management or Departments of Environment, or

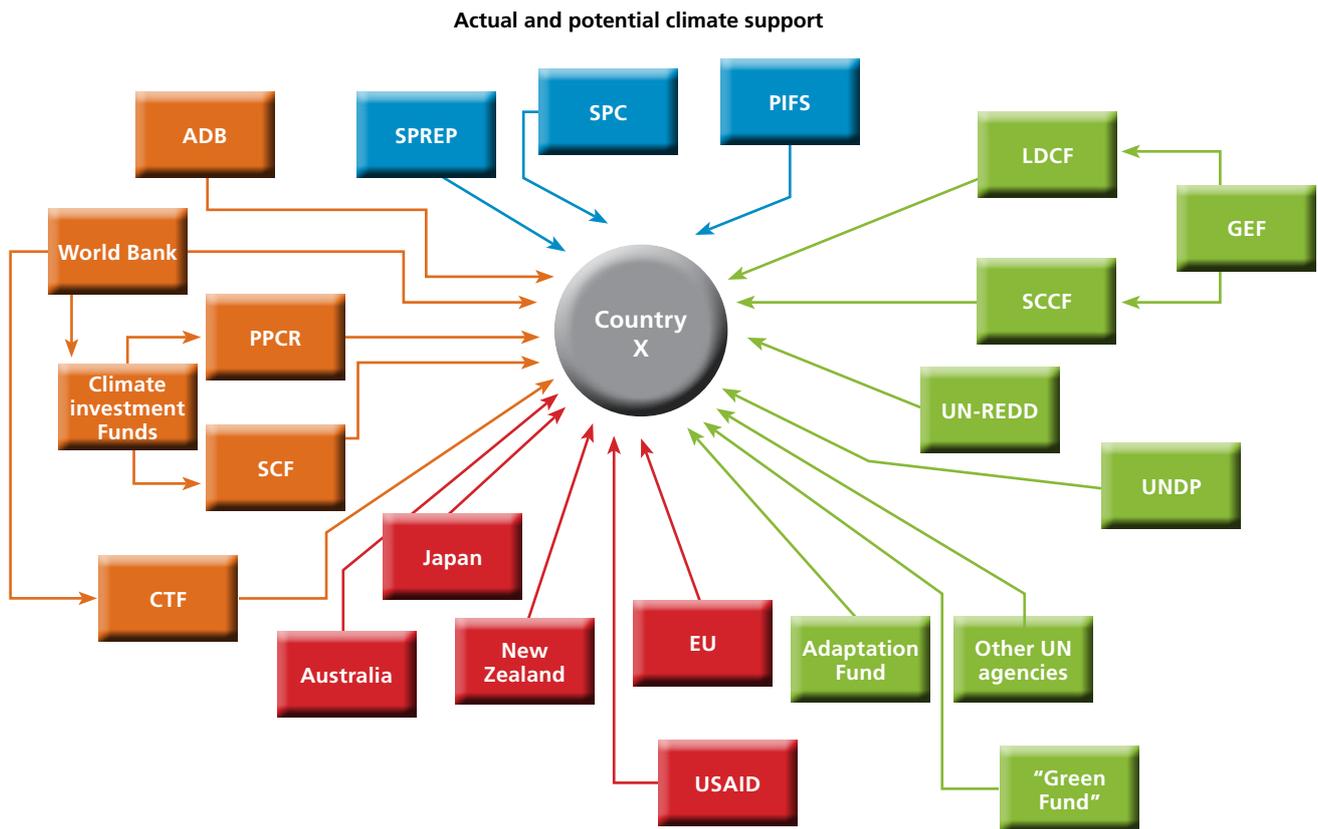
within relatively peripheral ministries. Thus the ability to ensure DRR and CCA policy coherence across and between development sectors, and to influence the shaping of development investment and multisector approaches, is limited. DRR and CCA anchored in the heart of the planning process within a central ministry such as Finance and Economic Planning, and strongly backed by the Office of the President/Prime Minister, would ensure political visibility for and responsible implementation of resilient development.

**Resilient development requires strong coordination and partnerships.**

The multitude and diversity of stakeholders, partners, and financing sources in the fields of DRR, CCA, and development often overwhelm the absorptive capacity of countries. This complexity for DRR and CCA is illustrated in figure 12.

Donors, development partners (including NGOs), and regional organizations need to coordinate their work to ensure efficient and appropriate use of resources, harmonize and simplify approaches to reduce the burden on countries' systems and capacity, and be more responsive to the needs and priorities of countries. An appropriate transparent consultative mechanism to ensure this type of coordination and cooperation has yet to be achieved, however. To maximize the efficient allocation of available resources and achieve effective coordination and implementation, a balance is needed between regional capacity, national capacity, local capacity, and capacity substitution. Where appropriate, budget support may be a viable option to address the capacity challenge.

Effective mechanisms are currently lacking for linking local priorities with national strategies for DRR, CCA, and development. A stronger collaborative partnership between NGOs, government, and donors is needed to ensure available resources are appropriately allocated to respond to local-level priorities. Significantly, individuals, families, and communities tend not to differentiate between CCA, poverty alleviation, or DRR interventions. Rather, they focus on the impact on their security and well-being. An enabling environment is required that encourages inclusion of community representatives in decision making and implementation efforts. Building capacity at subnational levels is fundamental to an effective enabling environment.



**Figure 12. The diversity and complexity of climate funding and support sources to a typical Pacific Island Country**

Source: Courtesy of Toily Kurbanov, Deputy Resident Representative, UNDP, Fiji.

Note: Orange boxes indicate support from multilateral development banks; green boxes indicate support from other multilateral sources; red boxes indicate support from bilateral sources; and blue boxes indicate support from regional organizations. ADB = Asian Development Bank, CTF = Clean Technology Fund, EU = European Union, GEF = Global Environment Facility, ICCAI = International Climate Change Adaptation Initiative, JICA = Japanese International Cooperation Agency, LDCF = Least Developed Country Fund, MDGF = Millennium Development Goals Achievement Fund, PCR = Pilot Programme for Climate Resilience, SCCF = Special Climate Change Fund, SCF = Strategic Climate Fund, UNDP = United Nations Development Programme, UN-REDD = United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation, USAID = United States Agency for International Development .

# 4 Fostering Resilient Development



Photo: John Hay

This section offers practical guidance on achieving more-resilient development and on addressing the underlying causes of vulnerability, poverty, and limited access to financial and other resources. It recommends specific steps for attaining each of the three requirements for resilient development identified in the previous section.

**Resilient development requires grounding risk considerations in development.**

#### **PRACTICAL STEPS:**

1. Strengthen support to relevant institutions to ensure that DRR and CCA are coordinated at all levels.
2. Focus on outcomes rather than inputs to clarify the roles and responsibilities of key actors and stakeholders and to assign them based on comparative advantages.
3. Make mainstreaming of climate and disaster risk considerations in development planning and processes a priority.
4. Ensure that climate and disaster data are easy to access, meet the needs of end-users, and inform the selection of appropriate DRR and CCA measures.
5. Proactively identify development initiatives that address the drivers of risk and seek to strengthen resilience; screen initiatives to ensure that benefits would not be jeopardized by changing weather and climatic conditions or by an extreme natural hazard event.
6. Adapt existing instruments and tools—such as land use plans, building codes, environmental impact assessments, etc.—to achieve high levels of resilience to all hazards.

**Resilient development requires robust and effective political authority, leadership, and accountability.**

#### **PRACTICAL STEPS:**

1. Anchor high-level coordination of DRR and CCA in a central ministry with a high level of political authority such as Finance and Economic Planning.
2. Secure political leadership and accountability at the regional level by providing support to PIFS, the region's preeminent political agency.
3. Make full use of existing mechanisms, such as strategic and corporate planning, budgetary processes and performance management, harmonizing DRR and CCA financing, and exploring financial assistance mechanisms, to increase pre-disaster and climate risk investment.
4. When planning and implementing on-the-ground DRR and CCA initiatives, use established inclusive and participatory best practice, adapted to local context, to help close gaps between communities, provincial governments, and central governments.
5. Make sure leaders have the knowledge, skills, and awareness to make sound decisions about disaster and climate risk management.



Photo: Thinkstock.com

## **Resilient development requires strong coordination and partnerships.**

### **PRACTICAL STEPS:**

1. Divide labor among regional institutions so they assume suitable roles; for instance, coordination responsibility could be anchored in the PIFS, which oversees regional development, cooperation, and integration; and DRR and CCA services could be handled by SPC and SPREP, which have the mandate, capacity, and comparative advantage to deliver them.
2. Align funding sources for CCA, DRR, and development to encourage stronger coordination and cooperation within donor organizations as well as between donors.
3. Use strong and transparent consultation and coordination mechanisms to facilitate sharing of data, good practices, and lessons learned.
4. Encourage an atmosphere of trust, respect, and flexibility among actors to promote coordinated and effective CCA and DRR efforts and to ensure appropriate levels of resourcing, access to information and local knowledge, and capacity support.
5. Promote joint planning, programming, and implementation of DRR and CCA interventions by PICTS and their development partners in ways that make optimum use of the comparative advantages of each.
6. Provide flexible financing arrangements that address both current and anticipated risks and deliver both shorter- and longer-term benefits.

## Notes

- 1 These seemed reasonable initiatives when they were undertaken but have ultimately proved harmful. See P. D. Nunn, "Responding to the Challenges of Climate Change in the Pacific Islands: Management and Technological Imperatives," *Climate Research* 40, no. 2–3 (2009): 211–31.
- 2 J. E. Hay and N. Mimura, "The Changing Nature of Extreme Weather and Climate Events: Risks to Sustainable Development," *Geomatics, Natural Hazards and Risk* 1, no. 1 (2010): 1–16.
- 3 Australian Bureau of Meteorology and CSIRO, *Climate Change in the Pacific: Scientific Assessment and New Research*, Vol. 1: Regional Overview; Vol. 2: Country Reports, 2011, <http://www.cawcr.gov.au/projects/PCCSP/publications.html>.
- 4 *Ibid.*
- 5 Pacific Catastrophe Risk Assessment and Financing Initiative (PCRAFI) currently comprises data sets, information, and risk models for the following hazards: tropical cyclones, earthquakes, and tsunami.
- 6 Asian Development Bank, "Solomon Islands: Strengthening Disaster Recovery Planning and Coordination," Project Number 41105, Rehabilitation and Reconstruction Programme, Asian Development Bank, 2007.
- 7 Pacific Islands Forum Secretariat, "Economic Costs of Natural Disasters in the Pacific Islands Region and Measures to Address Them," Out of Session Paper, Forum Economic Ministers' Meeting, Rarotonga, Cook Islands, October 27–28, 2009.
- 8 Pacific Islands Applied Geoscience Commission (SOPAC), "Socioeconomic Flood Impact Assessment in Nadi and Ba, Fiji," SOPAC, Suva, Fiji, no date.
- 9 World Bank, *Economics of Adaptation to Climate Change: Samoa* (Washington, DC: World Bank Group, 2010).
- 10 P. N. Lal, R. Singh, and P. Holland, *Relationship between Natural Disasters and Poverty: A Fiji Case Study*. SOPAC Miscellaneous Report 678 (Suva, Fiji: SOPAC, 2009).
- 11 United Nations International Strategy for Disaster Reduction (UNISDR) and United Nations Development Programme (UNDP), *Disaster Risk Reduction and Climate Change Adaptation in the Pacific: An Institutional and Policy Analysis* (Suva, Fiji: UNISDR and UNDP, 2012).
- 12 *Ibid.*
- 13 Asian Development Bank, *Climate Proofing: A Risk-Based Approach to Adaptation* (Manila: Asian Development Bank, 2006).
- 14 O. Chadburn, J. Ocharan, K. Kenst, and C. Cabot Venton, "Cost Benefit Analysis for Community Based Climate and Disaster Risk Management: Synthesis," Tearfund and Oxfam America, 2010, [http://www.preventionweb.net/files/14851\\_FinalCBASynthesisReportAugust2010.pdf](http://www.preventionweb.net/files/14851_FinalCBASynthesisReportAugust2010.pdf).
- 15 World Health Organization (WHO) and Pacific Islands Applied Geoscience Commission (SOPAC), *Sanitation, Hygiene and Drinking-Water in the Pacific Island Countries: Converting Commitment into Action* (Suva, Fiji: WHO and SOPAC, 2008).
- 16 This was the slogan for the 2009 and 2011 Global Platforms for Disaster Risk Reduction.





**THE WORLD BANK**

1818 H Street, NW  
Washington, DC 20433 USA  
Telephone: 202 477-1234  
Facsimile: 202 477-6391  
Internet: [www.worldbank.org](http://www.worldbank.org)  
[www.worldbank.org/pi](http://www.worldbank.org/pi)  
E-mail: [feedback@worldbank.org](mailto:feedback@worldbank.org)



**GFDRR**  
Global Facility for Disaster Reduction and Recovery

1818 H Street, NW  
Washington, DC 20433 USA  
Telephone: 202 458-0640  
Facsimile: 202 522-3227  
Internet: [www.gfdr.org](http://www.gfdr.org)  
E-mail: [drm@worldbank.org](mailto:drm@worldbank.org)