

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



SOLOMON ISLANDS COUNTRY ASSESSMENT



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Acronyms and Abbreviations

AusAID	Australian Agency for International Development
CCA	Climate change adaptation
DM	Disaster management
DRM	Disaster risk management
DRR	Disaster risk reduction
EU	European Union
GEFPAS	Global Environment Facility Pacific Alliance for Sustainability
GIS	Geographic Information System
MME	Ministry of Mines and Energy
MECM	Ministry of Environment, Conservation, and Meteorology
NACCC	National Advisory Committee on Climate Change
NAP	National Action Plan (for DRM)
NAPA	National Adaptation Plan of Action (for CCA)
NDC	National Disaster Council
NDMO	National Disaster Management Office
NGO	Nongovernmental organization
NZAID	New Zealand Agency for International Development
PICCAP	Pacific Islands Climate Change Assistance Program
RAMSI	Regional Assistance Mission to the Solomon Islands
SIACC	Solomon Islands Alliance on Climate Change
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 region (excluding Papua New Guinea). In the 1990s alone, reported natural disasters cost the Pacific Islands 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 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 report represents a stocktaking exercise to review the extent to which disaster risk reduction (DRR) and climate change adaptation (CCA) activities have progressed in the Republic of the Solomon Islands. It identifies gaps or impediments that hinder achieving the HFA principles and identifies opportunities for future DRR/CCA investment that would be timely, cost-effective, and implementable within a three-year timeframe. The focus is on risk reduction, rather than post-disaster recovery and response. While some specific sector activities are addressed in the assessment of Solomon Islands national and local government policies and institutional arrangements, the Solomon Islands report does not provide a comprehensive summary of sector-by-sector

activities. Instead, it refers to other reports that have covered this and complements these with suggestions for taking the necessary steps.

The goal of the report is to deepen the understanding in the gaps, opportunities, and needs at the national level toward stronger operational disaster and climate risk management in the Pacific islands and to link closely to other ongoing and future efforts by other donors and stakeholders (such as 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 that the Solomon Islands can take to inform its national development policies and plans and strengthen its capacity to reduce the adverse consequence of natural hazards and climate change, as it relates to risk reduction. The linkage of these two areas mainly includes managing the impacts of extreme weather events, variability in precipitation such as storm surges and sea-level rise.

This assessment highlights aspects such as 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 HFA 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 and externally driven approaches have not provided satisfactory results so far, the HFA emphasis upon a strong government commitment and action is one of the primary and early challenges to be surmounted in achieving goals of the International Strategy for Disaster Reduction.

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 demand relatively fewer efforts and resources and yield results that can lay the foundation for more complex, follow-up stages. Getting stakeholders to coordinate their activities in line with the Paris Declaration of Aid Effectiveness also appears to be relatively easier with such a modest starting point than with formal efforts aimed at overall “top down” coordination.

This Solomon Islands assessment begins by explaining the context of the country in relation to disaster

risk reduction and climate change adaptation. It follows with sections on the Key Country Findings and Detailed Country Assessment that focus on some key components relevant to HFA achievement: 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. The potential opportunities for future support are proposed in Annex A.

Funding for this assessment was provided by the Global Facility for Disaster Reduction and Recovery (GFDRR), which is a partnership with the UN International Strategy for Disaster Reduction (ISDR) system supporting the Hyogo Framework for Action. Other partners that support GFDRR work to protect livelihoods and improve lives include Australia, Canada, Denmark, European Commission, Finland, France, Germany, Italy, Japan, Luxembourg, Norway, Spain, Sweden, Switzerland, United Kingdom, USAID Office of Foreign Disaster Assistance, and the World Bank. ❖

Country Context

The Solomon Islands is a large archipelago comprised of 6 main islands (Guadalcanal, Malaita, Makira, Isabel, Choiseul, and New Georgia) and approximately 1,000 smaller islands. With a land area of 28,450 square kilometers, the Solomon Islands consists mainly of mountainous, heavily forested, volcanic islands and a few low-lying coral atolls (Figure 1).

The country is divided into 9 provinces, each with an elected Premier and Council and with a provincial administration. There is also a municipal administration for the capital of Honiara. While the strengthening of provincial administration is planned, at present it remains weak and largely controlled by central government in Honiara. At an estimated 507,000 (2008), the population of the Solomon Islands is growing at a rate of 2.8 percent per year. Forty-one percent of the population is below 15 years of age—a demographic situation that is increasing vulnerability to natural hazards.

Like Vanuatu, its neighbor to the south, the Solomon Islands has a high exposure to a wide range of geological, hydrological, and climatic hazards, including tropical cyclones, volcanic eruptions, earthquakes, tsunamis, landslides, floods, and droughts. Over the past

30 years there have been 6 major natural disasters (including 2 earthquakes—1 with an associated tsunami—and 4 tropical cyclones) directly impacting well over 100,000 people and causing over 100 deaths. The last disaster was the earthquake and tsunami that occurred on April 2, 2007, centered on the Western Province and with impact in Choiseul Province. Fifty-two people died, and 6,000 homes and other buildings, including schools and hospitals, were damaged or destroyed. The cost of reconstruction is estimated at around US\$100 million or 80 percent of the national recurrent budget. Only nominal budget provision was made for this in 2008.

The Solomon Islands extends over 1,450 kilometers in a southeast direction in the western Pacific. The location of the Solomon Islands in the western Pacific places it in the tracks of tropical cyclones and under the influence of El Niño and La Niña cycles, which bring increased risks of droughts and floods, respectively. Future climate change threatens to exacerbate the risks posed from tropical cyclones as well as floods and droughts.

Various factors combine to make the Solomon Islands significantly vulnerable to this wide range of natural hazards:

- Weak economy and limited livelihood opportunities.** Both the World Bank and the IMF rank the Solomon Islands in the lowest 20 percent of nations in terms of GDP per capita. With a gross national income (GNI) per capita under US\$750, the Solomon Islands maintains a least developed country status. More than 75 percent of the labor force is engaged in subsistence/cash crop agriculture, with less than 25 percent in paid work. The cash economy is narrowly dependent on forestry, agriculture, fishing, and, more recently, an expanding tourism sector. While the economy has experienced good growth rates in recent years of around 7 percent averaged over 2004–2007, it was driven in large part by substantial aid flows and unsustainable logging.

Figure 1. Map of the Solomon Islands



Source: Asian Development Bank.

This rather precarious economic situation exposes the country to considerable disruption and hardship in the event of natural disaster.

- ***Ethnic tensions and political instability.*** Ethnic tensions and civil unrest, particularly during the period 1998–2002, resulted in severe impacts on the economy and adversely affected social and political stability. The Solomon Islands Government was insolvent by 2002. At the invitation of the Government, the Regional Assistance Mission to the Solomon Islands (RAMSI), a multinational police-centered force organized by Australia, arrived in the country in 2003 to assist in restoring law and order and rebuilding the country's institutions, which had become largely non-functional. Renewed unrest and rioting occurred in April 2006 after the general election. Indications are that the current Government, which came to power early in 2008, has a more stable relationship both with communities and with the public service.
- ***Widely dispersed, inaccessible communities.*** The hundreds of islands in the country are spread over a vast maritime exclusive economic zone (EEZ) of 1.34 million square kilometers. Air transport services exist, but not all of the islands have airports; there are 35 airports, only 2 of which have sealed runways. Many islands have no roads at all; and on those islands with roads, the roads network is often very limited and in poor condition. There are only

34 kilometers of sealed roads in the country, out of a total of 1,360 kilometers. Rural areas do not have telephones or other modern communication facilities. Most areas of the country are therefore isolated and extremely vulnerable in the event of disasters.

In terms of disaster management arrangements, the National Disaster Council Act (1989), supported by the National Disaster Plan (1987), established a National Disaster Council (NDC). The NDC is supported by a National Disaster Management Office (NDMO) under the Ministry of Home Affairs. The NDC is reviewing the institutional framework for disaster risk management, and there are intentions to develop a National Action Plan (NAP) for Disaster Risk Reduction.

A new Climate Change Division, under the Ministry of Environment, Conservation, and Meteorology, will have CCA responsibility following a reorganization of the Climate Change Office in the Meteorological Service. An informal, multi-sectoral Solomon Islands Alliance on Climate Change (SIACC) has been replaced by a National Advisory Committee on Climate Change. A policy to frame the CCA activities will be prepared, and a National Adaptation Plan of Action (NAPA) for Climate Change is being developed. The institutional framework to support this is undeveloped, but there is the potential to connect into the proposed new DRM framework. ❖

Key Country Findings

Until recently the Solomon Islands Government has been pre-occupied with internal country difficulties and with political uncertainties. The structures of governance are therefore generally weak across all sectors with weak national planning and budgetary management. Within this environment, government focus on initiatives to reduce risk from hazards or climate change has been limited. Following the Initial National Communication on Climate Change (completed in 2001 but not submitted to the UNFCCC until 2004), the Government has shown limited attention to the issues it raised in the Initial National Communication and until 2008 has not budgeted resources toward DRR or CCA activities.

The NDC and NDMO have been responsible for preparedness and response, with the NDC largely leaving these functions to the NDMO. Cross-sector cooperation between the two offices has been limited. Activity in the area of climate change has been largely concentrated on meeting international reporting obligations. The advisory Climate Change Country Team set up in 1998 under the Pacific Islands Climate Change Assistance Program (PICCAP) to develop the Initial National Communication has been largely non-functional since 2001. In 2001 the Initial National Communication noted serious obstacles to its activities, including lack of full commitment of the Country Team, the lack of policy and enabling environment, the absence of an institutional framework and linkages for proper coordination, the unavailability of data and information, and the lack of skills and capacity. Lack of interest by the private sector was also observed. There has been little progress until now to address these issues apart from efforts to establish the SIACC and develop a NAPA.

The Solomon Islands has a moderate level of awareness but a low level of capacity and commitment to DRR and CCA initiatives across government as a whole.

The country has been slow in developing the required governance structures, and DRR/CCA mainstreaming into policies, plans, legislation, and regulations has not occurred. There are major gaps and barriers that need to be overcome for effective DRR/CCA implementation, including:

- No facilities for organizing, archiving, accessing, and easily sharing data. Although considerable historical data are available, they are scattered among agencies and are poorly organized and archived.
- Absence of effective mechanisms for cross-sector collaboration and cooperation.
- Lack of capacity and tools to carry out data analyses, hazard mapping, and vulnerability and risk assessments.
- Absence of regulatory environment (including enforcement) to promote risk reduction activity.
- No mechanism for the mainstreaming of DRR/CCA-related issues into national and sector policies, plans, legislation, and regulations.
- Lack of monitoring and evaluation.
- Weak linkages among national, provincial, and community governance structures.
- Low priority assigned to DRR and CCA issues by the national planning and budgetary processes resulting in a low priority by donors.

These are significant obstacles to department or agency activity or private sector participation. There is neither evidence of private sector-supported DRR/CCA activity nor evidence of the sector seeking Government influence to strengthen an enabling environment. Rather, government officials report that the private sector generally exploits weak governance arrangements. During infrastructure re-instatement following the April 2007 earthquake/tsunami in Western and Choiseul provinces, external consultants did not

address risk reduction measures despite international funding policies calling for them. However, there are indications of change following lessons from the 2007 earthquake/tsunami. Also, the policy statements of the new Government from January 2008 stress DRR/CCA initiatives and infrastructure.

In 2008, as ethnic tensions and political uncertainties lessened, there were indications that disaster risk reduction and climate change adaptation were gaining traction in the Government, at least at the national level. These indications include:

- Establishment of a Climate Change Division within the Ministry of Environment, Conservation and Meteorology, with more staff and a higher profile of the CCA activities within government.
- Establishment of the National Advisory Committee on Climate Change (NACCC) as a cross-sector advisory group for preparing the NAPA.
- Increase staff of the NDMO located in each province to provide disaster management (DM) and DRR support, reflecting the recognition of DM/DRR as an important component of provincial capacity.
- The work, supported by SOPAC and AusAID, to review DRM institutional framework, leading to an expected rewrite of the NDC Act and the National Action Plan. Government is considering the integration of the DRR/CCA structures that would reinforce sector accountabilities and rationalize organizational arrangements for risk reduction activities.

These are positive indications of possible development of conditions for realistic risk reduction activities. With frameworks to be developed on the provincial and community level, current ad hoc civil society activities have a chance to become more sustainable.

This report has identified six priority areas where investment could prove effective in overcoming some of the constraints to strengthen DRR/CCA programs:

- Review of the volcanic hazard and establish volcano monitoring and early warning system;
- Establishment of an integrated hazards unit with information system, tools, and GIS capability;
- Development of the Guadalcanal flood plain management regime, as well as the monitoring and warning systems;
- Support of the Climate Change Division for development of a CCA policy, governance arrangements, and action plans;
- Support of the implementation and integration of the new institutional framework of the National Disaster Council, including CCA; and
- Undertake DRR activities and investments within priority sectors and at the community level.

These 6 opportunities for support are selective. They derive from a combination of priorities identified by the NDMO, the Climate Change Division, and other agencies of the Government of Solomon Islands. They were selected from a larger set of opportunities based on 4 criteria: (a) they directly involve risk reduction; (b) are likely to produce tangible results within three years; (c) are likely to have sustainable, longer-term benefits; and (d) have an identified in-country commitment, champion, and/or effective arrangement for implementation.

A summary of the country situation and the gaps or impediments to effective risk reduction, which justify the selection of these opportunities, is presented in Table 1. The last section of report elaborates more on these opportunities for investment. ❖

Table 1. A Summary of the Key Gaps and Opportunities for DRR and CCA for Solomon Islands.

Situation	Gap	Opportunities
Very high exposure and vulnerability to volcanic eruptions and tsunamis.	Lack information on volcanic hazard risks, monitoring capability, and integrated warning and response plans for at-risk areas.	Review hazard and establish volcano monitoring & early warning system , including risk assessments for key volcanoes, identification and establishment of monitoring systems, training, and developing alert and response system.
Hazards advisors spread over three agencies and insufficient hazards and vulnerability information to underpin strategies, plans, and actions to reduce risks. Government considering the integration of hazards advice.	Lack of integrated hazard advice and capacity for analysis and assessment of vulnerabilities. Weak information management with limited capacity regarding information system management, hardware and software computing capacity, and tools and models for resource managers.	Implement an integrated hazards unit for Solomon Islands, and establish an integrated hazards information system and tools (with GIS capability) by developing a Hazards Information Policy; assessing data needs; identifying storage requirements, analysis tools, and mapping needs; acquiring computer hardware, software, and high-speed Internet connection; and supporting technical capacity building
Solomon Islands are facing increasing flood hazards from growing settlements in flood plains.	Limited spatial knowledge of present and future risks of flooding and a warning and response system.	Develop Guadalcanal flood plain management regime and warning system , including review of existing hazard maps and updating, including additional flood risks from scenarios of future climate change, development of flood warning and response system, and development of floodplain management plans.
The government of Solomon Islands has bolstered climate change by creating a new Climate Change Division and is addressing new explicit institutional arrangements and accountabilities for DRM including CCA.	Limited capacity within Government to progress policy development and implement arrangements regarding CCA.	Support bringing together DRM and CCA arrangements in implementing the institutional frameworks and the appropriate elements of the NAPA and NAP (soon to be developed) , in particular policy development, governance arrangements into provincial and community level, and capacity development.

Detailed Country Assessment

Knowledge, data, tools

The key hazards of the Solomon Islands include tropical cyclones, earthquakes, tsunamis, landslides, volcanic eruptions, floods, and droughts. Data and information on geological hazards are produced by the Geohazards Unit, climate data by the Meteorological Division, and streamflow data by the Water Resources Division.

In terms of climate-related hazards like tropical cyclones, floods, and droughts, the Meteorological Division is a key source of climate data and information in support of the Climate Change Division and CCA/DRR-related work. The Meteorological Division has 39 staff, most of whom are operational staff located in the provinces. Climate data required for hazard and risk assessments are potentially available from four sources:

- (a) Stations operated by 6 staff that represent the current active formal monitoring capacity;
- (b) Historical records from the defunct network of stations established during Colonial administration with effort to recover and digitize data going back to the 1800s;
- (c) Defunct network of voluntary stations where efforts are underway to recover and digitize these data and to revive the voluntary network; 10 new gauges have been ordered, with the intention of eventually having a network of 150 voluntary stations; and
- (d) Spatially interpolated climatologies for monthly temperature and precipitation, developed by the Centre for Resource and Environment Studies (CRES) at Australian National University during the 1990s. The hard copies of these maps are held by Meteorological Division, but it is unclear whether the digital data files for these spatial climatologies still exist.

Flood hazards are perceived as a lesser but more common threat, with flooding occurring particularly in Guadalcanal, Malaita, and Makira. However, vulnerability to floods appears to be increasing as population pressures and urbanization creates pressure on low-lying land subject to river flooding. Streamflow data are collected under the Water Resource Division, but only two working stations are operational, on Santa Isabel and Malaita. Both are established for purposes of monitoring water resources and hydropower, not flooding. There were 4 other stations, now non-operational, for which data are still available (the oldest record dating back to 1965). Rainfall data are also collected at these stations; however, they are not shared with the Meteorological Division. Coarse-scaled flood hazard maps exist for northern Guadalcanal. The Meteorological Division issue flood warnings based on weather forecast and satellite data. Yet, neither monitoring for accuracy of the data nor impact assessments of the warnings on population is conducted. It was suggested that a weather radar capacity would improve the warning accuracy.

Landslide, particularly associated with tropical cyclones and earthquakes, is a widespread hazard in the Solomon Islands. Landslides account for most of the fatalities that have occurred during tropical cyclones in the past century. Understanding of the geological aspect of the landslides is sufficient but has not yet been translated into maps for purposes of vulnerability and risk assessments. Mapping of landslide hazards requires aerial photographs. Many of the aerial photographs date back to WWII, with better, updated sets held by the Ministry of Lands, Housing and Survey. With skills in place, it would be recommended to map landslide hazard areas in the Western Province.

Volcanic hazards represent a rare but potentially catastrophic event in terms of damage and loss of life. There have been 4 active volcanoes in the Solomon Islands—Kavachi and Simbu in the Western Islands,

Savo off Guadalcanal, and Tinakula in the Eastern Islands. Numerous eruptions were recorded in the 20th century, with no fatalities occurring. However, two large eruptions in the previous century, from Savo and Kavachi, resulted in death of an estimated 600 people (mostly from associated tsunamis). Honiara, which is only 20 kilometers away from Savo, is vulnerable to volcanic ashfall and tsunami. Thus, volcanic eruptions represent a low probability/high impact hazard; however, very little has been done to map the hazards or to reduce the risks.

In terms of earthquake hazard, there are data on seismic events dating back to the 1930s. There is only one seismology station established in the early 1960s as part of the global network. Two other stations are no longer operational, but their accumulated data are still available. Seismologic events are generally well understood, but more information at the provincial level is required for future analyses. An enlarged monitoring network is needed to understand seismic risks at the provincial scale. The priority should be given to compiling, analyzing, and mapping the information. At present, only two seismology technician staff are members of the Geohazards Unit. The capacity needs to be elevated in order to move from the general seismological analysis to the seismology of the Solomon Islands – a difference in scale and detail. Once this is accomplished, then improving the monitoring network should be the next step.

In general, a surprisingly large stock of existing data is available. However, its analysis is lacking. For DRR and CCA, these data are crucial for vulnerability and adaptation assessments, risk assessments, baselines for scenarios of climate change, and extreme climatic event analyses. The existing holdings are scattered and not well documented, both within and among sector agencies. Key staff members are often not aware of data and information availability since data does not seem to be clearly explained and easily accessible.

Gaps

- *Lack of common focus for hazard management and skills development for hazard analysis and vulnerability assessment.* Bringing the separate hazards departments into a common unit and developing skills and systems for an all hazards capability could prove beneficial. It is currently being considered by Government.
- *Absence of centralized, systematic databases and retrieval systems for data on all hazards.* There is need to trace, compile, collate, and systematize these data as a basis for analyses in support of DRR and CCA.
- *Lack of procedures and protocols for reciprocal data sharing between sector agencies.* Data, such as map bases and statistical data, are held within sectors and not shared readily.
- *Alarming drop in number of continuous time-series records that include recent data.* Monitoring networks have been severely degraded in the past 10-15 years, which created large gaps in time-series data; in the future it can impede trend, extreme event, and other analyses required for risk and vulnerability assessments. If this tendency continues, in 30 years no data for analysis would be available.
- *With a few exceptions, hazard maps are unavailable at sufficient resolution scales for the purposes of DRR and CCA.*
- *Difficulty in stimulating a pro-active attitude of staff working on natural hazards.* With a new focus on risk reduction, this would change but a risk of capacity loss is involved, as long as there is no call for this information offered by the staff.

Vulnerability and risk assessments

While there is potentially a firm base for hazard mapping, the country is still facing substantial challenge in

adequately identifying its key vulnerabilities and risks, including mapping of the communities at risk and the timing of the hazards.

In disaster risk reduction, the NDMO, which has the primary role for disaster management, is only being introduced to the DRR. While it is recognized that vulnerability and risk assessments will be central to its activities, its current focus is to strengthen DM arrangements and develop capacity in the provinces. It has not yet provided the guidance to other sector agencies. This reflects the fact that DRR has not yet been included into policies, plans, and legislation, as well as relevant sector agencies activities.

The institutional framework for DRR, accountability, and connections among different agencies is being established. There are two challenges faced by the country and the donors: (a) commitment to establish an operational framework, and (b) donors' commitment to assist with funding of the capacity development required over the next three years and beyond.

In climate change adaptation, the situation is similar. With end-user interest lacking, the Meteorological Division has not taken a pro-active approach to vulnerability and risk assessment in support of active risk reduction. It has previously focused on coordinating vulnerability and adaptation assessments only at a broad-brush scale as needed, for example, for national reporting for the Initial National Communication to the UNFCCC. The new Climate Change Division, which takes over the CCA role from the Meteorological Division, will be responsible for the preparation of the Second National Communication and the development of the NAPA in the first instance. Climate change adaptation has not been mainstreamed into policies, plans, and legislation or into the relevant sector agencies. The opportunity exists to integrate this activity into the institutional framework being developed for DRM.

At present there are no “clients or end users” and therefore no demands for detailed risk profiles and vulnerability assessments to underpin DRR and CCA. The Meteorology Division (in MECM), Geohazards Unit (in MME), Water Resources Division (in MME), and other agencies could contribute to vulnerability assessments and risk profiles. The capacity, however limited, of these agencies for vulnerability assessment and risk profiles is not coordinated or focused. It would be beneficial to bring these hazards units together to build capacity; the Government is considering this as part of the institutional framework review for DRM.

Gaps

Existing gaps should be addressed to make available full vulnerability and risk assessments. These gaps include:

- *Lack of commitment by end users who do not have risk reduction in their frame of priorities, regarding sectors, areas, and dimensions of vulnerability and risk needed to be addressed.* For both DRR and CCA—and their areas of common concern—directions are required in government policies and institutional frameworks. Priorities need to be established with end-users.
- *Unavailability of tools and models to transform data into vulnerability and risk assessments.* Generally, expertise exists and should be used for development of tools and models to analyze and transform data into DRR/CCA-related products.
- *Absence of a coherent, integrated entity with capacity, data, and knowledge to produce risk and vulnerability assessments.* In the Solomon Islands, the capacities required to produce such assessments are spread over several agencies that do not communicate or interact easily. For example, the Ministry of Lands, Housing and Survey has GIS capability, but the Geohazards Unit has the knowledge and skills required to use GIS in creating credible haz-

ard maps. The capacity will be difficult to develop without an integrated entity.

Mainstreaming into plans, policy, legislation, and regulations

In 1998-2001 a Climate Change Country Team was established under PICCAP to prepare the Initial National Communication. After 2001, Country Team ceased to operate. The 2001 Initial National Communication noted that adaptation to effects of climate and sea-level change could only be implemented effectively if measures are taken to address wider development issues. These measures include:

- Development of a national policy framework,
- Capacity building and institutional strengthening,
- Public awareness and education.

Serious obstacles listed in the Initial National Communication addressed these issues, including only part-time commitment of the Country Team, lack of policy and any enabling environment, absence of institutional framework and linkages for proper coordination, unavailability of data and information, and lack of skills and capacity. Until now, there has been little progress to address these issues, and mainstreaming of CCA has not occurred.

In 2007 the SIACC, an informal coordination group, was formed. However, SIACC met only once, and in June 2008 the new Climate Change Division replaced it with a new NACCC comprising politicians and officials.

Initially, the Climate Change Division was responsible for preparation of the NAPA, which is now in draft form. The Division was also to address the development of a climate change policy, relevant legislation, and preparation of the Second National Communication. The policy development should lead to identi-

fication of cross-sector functions and accountability, and help mainstreaming CCA into departmental activities. Integration with the institutions developed for DRM would provide connection with provincial and local authorities and civil society activities in this area.

The DRR coordination is the responsibility of the National Disaster Council, which focuses on disaster management response. The NDC Chair observes more attention and importance shall be given to disaster risk reduction. To facilitate this, the institutional arrangements are being reviewed as part of the review of the National Disaster Act and the National Disaster Plan. In the meantime the NDMO is continuing capacity development and promoting awareness in the provinces.

Presently, CCA and DRR concerns are not integrated into Government plans or legislation; however, a good start has been made. Capacity needs to be raised to ensure further progress.

Gaps

- *Insufficient capacity to establish policy framework and enabling environment for CCA.* The CCA continues to be externally driven, with insufficient emphasis placed on developing explicit governance and institutional capacity to create the necessary enabling environments.
- *Delayed commitment to implement the institutional framework for DRM and provide for its integration with CCA.* The proposed arrangements are awaiting approval of the Cabinet.
- *Lack of capacity to implement the frameworks, including at provincial and local levels, as well as to engage civil society.* A three-year implementation program is required to give effect to the adopted frameworks.
- *Non-sustained funding commitment to support the*

development and implementation of the frameworks

both in-country and from donors to support these activities.

- *Inadequate national planning and budgetary processes to support the mainstreaming of risk reduction.*

Monitoring and evaluation

With the absence of risk reduction policies and frameworks there is no mechanism to monitor and evaluate DRR/CCA activities. In the institutional framework, which is being considered by the Cabinet, both DRR and CCA activities will be reported to the Government through the National Disaster Council chaired by the Prime Minister's Office.

Arrangements for review of risk reduction activities are being considered; detailed procedures will also need to be developed.

Awareness raising and capacity building

The National Disaster Council runs an annual Disaster and Risk Awareness Campaign through the NDMO with the participation of the Meteorological Service; the MME Geohazards and Hydrology Units; the Ministries of Health and Education, the Police, Search and Rescue; and several NGOs. The Campaign targets schools, villages, and the business sector and concentrates on hazard information, preparedness, and warning arrangements. The NDC Chair observed that risk reduction awareness programs shall be conducted in villages; recent recruitment and training of 10 staff in the provinces is intended to focus on disaster management and risk reduction awareness. Civil society will be involved in developing and delivering these programs.

Gaps

- *Lack of funding to support planned campaign.* To be effective programs need to be applied at the village level and continued every year. Required resources and coordination is significant to address 10,000 villages of the Solomon Islands.
- *Materials and content need to be developed.* Core frameworks need to be developed within which to coordinate NGO and civil society programs.

Governance and decisionmaking

The National Disaster Council Act (1989), supported by the National Disaster Plan (1987), established the NDC to overview arrangements and operations for DRM, with support of the NDMO, the NDC is reviewing the institutional framework for DRM. There are intentions to develop a National Action Plan for DRM.

A new Climate Change Division, under the Ministry of Environment, Conservation and Meteorology, has responsibility for CCA. A policy to frame these activities will be prepared, and a draft NAPA has been developed. The institutional framework to support this is in the process of development, and there is the potential to integrate CCA with the proposed DRM framework.

Disaster risk reduction is a responsibility of the National Disaster Council. Until now, planning has not taken into account risk reduction since disaster management has been the major focus. Renewed importance of DRR has resulted in a review of the National Disaster Act, which will incorporate DRR. A need to strengthen institutional arrangements for DRM across sectors and agencies and on the national, provincial, and local levels was recognized, especially after the April 2007 earthquake/tsunami in the western provinces.

The NDMO, the secretariat of the NDC, has trained 10 new regional disaster coordinators to be deployed

in the provinces as civil servants. The NDMO has increased its staff from 2 in 2005 to 15 in 2008. Five are based at the national office and 10 are new positions (one for each province). This increase in staff represents a significant Government commitment toward DRM. More staff training is planned. Provincial officers are responsible for helping provinces to develop their action plans; raising awareness; and, at the community level, providing training and helping communities to identify risks and respond to them.

The NDC is committed to establishing relations with the communities and across national agencies that in the past have not been engaged. The NDMO is also advocating a relationship between DRR and CCA. Increased funding—reflected in the hiring of new staff—reflects the commitment and growing awareness within the Government. However, at the level of national planning and budgeting, the processes and support to provide for mainstreaming and implementation has yet to be developed. Lack of budgetary support is a major impediment to DRR, as well as CCA.

To integrate DRR, the NDC needs to commit to the outcomes of the institutional review leading to the revision of the National Disaster Act and the National Disaster Plan and complete them by mid-2009. The NAP is also an important process to be carried out to establish the multi-sector three- and ten-year action plans for implementation. The NAP and the NAPA could be addressed within one institutional framework, an opportunity that should be encouraged.

Land use and building controls are limited. However, the institutional arrangements under consideration include a Risk Reduction Committee of the NDC, which would address these and other CCA issues.

In terms of CCA, the Meteorology Division was the focal point for climate change issues, including responsibility for the Second National Communication and

NAPA. However, with its establishment, the Climate Change Division became responsible for these tasks. The Division has only two staff, clearly an inadequate number, but there is a budget commitment on the part of Government to increase this number to six.

The Climate Change Division operates under the Environment Act 1998. However, climate change is not explicit in the Act. This puts the Climate Change Division in a weak position. One of the priority tasks identified by the Division is to firm up its position and role with the development of a Climate Change Policy Framework, the intention being that the Framework would lead to the development of a stand-alone climate change act or policy. This would shore up the Division and give it a mandate, without which it could be left vulnerable and unsustainable, as has happened in the past. Under consideration is the inclusion of the CCA activity within the institutional framework of the National Disaster Council chaired by the Office of Prime Minister. This would strengthen its access to the senior levels of government and also provide arrangements through provincial government and civil society to the community level with the DRM arrangements.

Impediments

- ***Absence of CCA/DDR content in policy, legislation, and in the National Disaster Plan.*** Roles, functions, and accountabilities need to be provided for across sectors. These are included in the institutional arrangements under consideration but significant support will be needed for implementation. Integration of arrangements for DRR/DRM and CCA would strengthen the basis for both. Also under consideration is the integration of the hazards functions that would allow for a common skills set and focus for vulnerability and risk assessment.
- ***Weak policy commitment, and national planning and budgetary processes.*** The focus for DRR and CCA needs to be championed to get cross-sector support. Also a political champion is needed to get these is-

sues included in national planning and budgetary arrangements. The new institutional arrangements under consideration for the NDC would provide for this. There is political support for the inclusion of CCA processes within this. Development of specific CCA policy and coordination across agencies remains a need.

Coordination among government agencies

With regard to DRR, coordination between the NDC, NDMO, and other ministries (even though they are represented on the NDC) has not been well established. Other ministries have not committed to active DRR. It is not perceived to be a mainstream activity for them. The perception has been that DRR was led by NDC and Home Affairs. Upgrading the institutional framework, the legislation, and the National Disaster Plan is seen as a priority by NDC in order to strengthen DRM arrangements through provincial government and into communities, and to mainstream DRR into planning processes across government agencies. Detailed arrangements have been developed and are under consideration. Once a commitment is made a significant effort will be required to promote and implement the arrangements at both the national cross-sector level and at the provincial level to communities. A significant role is envisaged for NGOs and civil society implementing arrangements at the community level within the new institutional framework.

At provincial-level government, awareness and commitment is low. At this level Provincial Disaster Plans and Committees (comprised of officials) either do not exist or are non-operational. Only 3 of 10 provinces have committed office space. At this level, the focus, if any, is on DM arrangements and the issues of DRR are not rated. Provincial government perceives its mandate for DRM as weak and indeed the political

arm does not have a function during disasters under the current National Disaster Plan. Provincial Premiers are keen to see the new institutional arrangements adopted, including a mandated role in the legislation. Awareness raising and capacity building are sorely needed, particularly for disaster risk reduction. There is US\$600,000 in government money that has been committed to support the 10 provincial disaster coordinators who will establish provincial structures and perform mainstreaming and community outreach activities. Their AusAID-supported training has been completed and there is a European Union program to establish Provincial Disaster Coordination Centers in each province and municipality over the next 4 years.

With regards to CCA, the situation is much the same as with DRR. The coordinating cross-sector committee set up to develop the NAPA—the National Advisory Committee on Climate Change (formerly the Solomon Islands Alliance for Climate Change)—does not have a policy or legal basis to provide the incentive for an effective coordination role. The Climate Change Division has set a priority to establish a policy basis for its functions, which is needed before it can effectively perform a coordinating function. The Ministry of Environment, Conservation and Meteorology supports the CCA connection into the new NDC framework to bring CCA issues to the attention of government agencies and the Government at the proposed higher level.

Impediments

- *Lack of commitment to the new institutional arrangements for the National Disaster Council, including CCA.* Until there is formal commitment of Government to these arrangements, the rewrite of the legislation and the National Disaster Plan cannot proceed. Once legislation is formalized, there is a need for a substantial commitment to its implementation across sectors and through provincial government to communities.

- *Without a workable policy agencies have no sense of obligation to CCA.* Development of specific CCA policy, and amendment to the Environment Act, as necessary, will give effect to roles and functions of relevant agencies concerned with CCA
- *Weakness within provincial government for DRM and CCA issues and lack of connection into communities.* The roles of the Provincial Disaster Coordinators to establish the new provincial and community-level arrangements will need to be supported over the next 3 years and beyond. In this regard, the connection with NGOs and civil society will be essential.

Coordination among donors and key stakeholders

In-country donor activity in risk reduction (both for DRR and CCA) has been limited. AusAID has had a substantial program for disaster management development through the NDMO, and the EU is addressing disaster management facilities in the provinces. However explicit DRR activity is not raised by the Government as a priority and so does not enter discussions with donors.

Generally, donors view DRR as cross-cutting and regional in scope, and both AusAID and NZAID do not note it within their country framework. The CCA activity has been confined to support from UNDP toward the development of the NAPA without involvement of other funders.

There has been limited scope for coordination between donors in the forthcoming GEFPAS-funded activity, implementation of NAPA, and potential activity for DRM under the yet to be developed NAP. As this set of activity comes into focus, there will be a need for coordination between donors and stakeholders at both the country and regional level.

For NGOs the focus has been on preparedness and response in communities, but increasingly they see a role to support government in DRR/CCA activity. The NGOs are involved with the NDMO through the National Disaster Plan, and its redrafting will explicitly address their involvement with risk reduction activity. For CCA NGOs have representative membership on the NACCC.

Impediments

- *The Government has not identified risk reduction as a country priority and so does not raise it in discussions with donors.*
- *The Government views DRR and CCA activity as externally driven and has come to expect that it will be externally funded.* It is important that expectations on countries are set out clearly and explicitly to avoid discussion being defaulted. Donors should be explicit about regional versus country perspectives for DRR.

Planning and budgetary processes

Current national planning and budgetary processes are weak, and risk reduction is not an element in the planning and budget control process. The activity is not mainstreamed either for DRR or CCA, and so it does not appear in national planning or budgeting.

It is useful to note that DRM and CCA issues appear in the Government Policy Statements of January 2008 for disaster management, climate, and infrastructure for the first time and indicate a changing attitude. It is also noted that a Medium-Term Development Strategy is being developed by the Ministry of Planning and Aid Coordination; and, arising from the institutional framework review, it is expected to address risk reduction issues.

Impediments

- *Lack of champions at the political and senior govern-*

ment level. Indications are this may be changing.

- *Lack of awareness of specific issues and how to manage them.* Support to the NDC and awareness material for politicians would help build commitment.

Implementation of actual risk-reducing measures

In the CCA context, the last major activity completed was the Initial National Communications to the UNFCCC submitted in 2004. The Climate Change Country Team, which produced and completed the Communication in 2001, disbanded, and climate change issues were relegated to a two-staff unit within the Meteorological Division. There has been some activity commencing the development of the NAPA but otherwise little progress on CCA issues. Earlier this year this small unit transitioned into the new Climate Change Division with an agenda of 5 major activities: (a) developing the NAPA; (b) preparing the Second National Communication; (c) preparing a Climate

Change Policy Framework (d) reviewing the Environment Act; and (e) formalizing the NACCC to oversee major initiatives, like the NAPA. The draft NAPA is being considered; and with funding committed, implementation is expected to follow.

In the DRR context, there have been some awareness programs, but the focus to date has been on developing disaster management capability. This is seen by the NDMO as a necessary precursor to addressing more intangible issues of risk reduction. In recent times Government focus has been elsewhere, but in the present atmosphere, there are indications of a willingness to address the governance issues of risk reduction.

The GEFPAS funding will commence for water development projects and for food production/security on low-lying atolls.

It is noted for the reconstruction of infrastructure, following the April 2007 earthquake/tsunami in the western provinces, that risk reduction considerations have not been a significant factor. ❖

Opportunities for Investment

From the above country assessment, it is evident that the Solomon Islands is in the initial stages of garnering widespread awareness of, and creating organizational arrangements for, DRR and CCA within its National Government. With ethnic and political tensions diminishing, some attention has been committed to strengthening disaster risk management arrangements. With this new focus comes the opportunity to initiate new DRM/DRR frameworks and the potential to integrate arrangements for CCA. The stage has been set with increased staff for the NDMO and the new Climate Change Division and the formation of cross-sectoral committees with their sights targeted on advancing the NAP and NAPA processes. With the adoption of the new institutional framework, significant support will be required in policy development and legislation for CCA, in the implementation of the framework through national agencies and provincial government and into communities with linkages to civil society, in information management and capacity development for vulnerability and risk assessment, and in on-the-ground activity implementing the NAPA and NAP.

As noted in the introduction, this country assessment highlights current country status, gaps, opportunities, and barriers related to national policies, strategies, plans, and activities regarding the management of natural hazards, as well as with the enabling environment for a comprehensive risk management approach to natural hazards. It also highlights the capacity to undertake such a comprehensive approach, including institutional arrangements, human resources, public awareness, information, and national budget allocations. In most discussions among key government officials and other stakeholders, investment programs are prioritized and selected based on expectations of several criteria (costs, available funding, efficiency, expected benefits, institutional, financial, legal and related capacity, etc.).

The Solomon Islands and most of the Pacific island countries already have established policies, institutions, systems and related structures to address DRR/CCA challenges, and several programs (NAPs, NAPAs, etc.) have been prepared and are ready to be enacted. Unfortunately, there are significant gaps in the 5 key HFA areas discussed in this report; additionally, while some efforts have been made to address certain issues, others (funding, staffing and related operational support) persist. While efforts have been made to identify and address high-yielding, short-term priority issues, it appears that more effort is needed to fully categorize such needs and decide upon short-, medium and long-term programs.

Solomon Islands policymakers, sector officials (in consultation with local stakeholders) and various donors and financial institutions compiled a list of priorities. The Government may choose to pursue any these options with its own resources, with support from the international donor community, and/or international financial institutions like the Asian Development Bank and the World Bank. Grant funding for Solomon Islands is being mobilized from the Global Facility for Disaster Reduction and Recovery (GFDRR) to support pilot programs which could be leveraged to undertake some of the proposed investments, based on demand. Funds are expected to support programs from 2009-11.

Consequently, there are many gaps and impediments to DRR and CCA that impede potential opportunities for investment leading to the improvement of risk reduction. In narrowing the field of opportunities, this report has applied two sets of filters or criteria. The *first set* favors those opportunities that achieve the following:

- Address risk reduction directly;
- Are likely to produce tangible results within three years;

- Are likely to have longer-term sustainable benefits; and
- Have in-country commitment, champions, and/or institutional arrangements to promote implementation.

With these criteria in mind, and with consultation and expert judgment, 7 priorities for investment were identified. These 7, along with a summary of the rationale for each in relation to the above criteria and as linked to the discussion in the body of the text, follow:

- (1) *Review hazard and establish volcano monitoring & early warning system.* In terms of damage and loss of life in the Solomon Islands, volcanic eruptions are rare but high-impact risks. However, little has been accomplished with regard to hazard and risk mapping. The monitoring capacity is limited, and there is no alert and response system in the event of volcanic crisis. For 4 key volcanoes associated with the higher-risk situations, it is feasible to carry out the necessary risk assessments, establish monitoring systems, and conduct training in monitoring and maintenance within a 3-year period, with long-term sustainable benefits. The program should be strongly supported by NDMO.
- (2) *Establish integrated hazards information system and tools (with GIS capability).* Despite an alarming drop in data collection in the Solomon Islands, there exist considerable historical data. But they tend to be scattered, disorganized, and often not analyzed and utilized effectively. In anticipation of the development of cross-sectoral, cross-governmental (national to local) collaboration and integration of DRR/CCA effort; and systematic system of organization, storage, and sharing of data and information, including communicating and sharing with outer islands, is required. Technically, such a system could be established well within a three-year period, and, once established, would have long-term benefits in facilitating integrated action across agencies and sectors. To be successfully implemented, the information system would have to be strongly promoted by NDMO and the Climate Change Division.
- (3) *Develop Guadalcanal flood plain management regime and warning system.* The Guadalcanal flood plains are developing rapidly as population is attracted to urban settlements. This is exacerbating a significant flood hazard to expanding settlements, as evidenced by the flooding in 2005 and 2007, which displaced thousands of inhabitants. There is a paucity of river and rain gauges and thus no effective warning and response system, no hazard maps, and no zoning or land use management. A three-year program, which factored in future climate changes, would provide significant long-term benefits in preventing and reducing risk. This is supported and would be driven by the NDMO and implemented by Ministry of Mines and Energy along with the Meteorological Division.
- (4) *Support the Climate Change Division for development of a climate change adaptation policy, integration of governance arrangements through the NDC, and implementation of action plans.* Government support for CCA is reflected in the decision to establish a Climate Change Division with expanded staff. In its formative stages of development, the Division requires a policy framework, along with significant awareness raising within relevant government agencies. These activities needed to underpin the NAPA process, to implement action plans, and to mainstream CCA into sectoral strategic planning and budgetary process. While staff numbers are being expanded, the expertise needs enhancing. There is the need for technical assistance and capacity building to get the crucial tasks underway. This is achievable within three years and would provide the foundation for sus-

tainable activities thereafter. The lead agency and promoter is the Climate Change Division.

- (5) *Support the integration and implementation of the new institutional framework for the NDC through national agencies and provincial government and into communities with linkages to civil society.* Development of the NDC legislation is required to give effect to the framework, the new National Disaster Plan, and the integration with CCA. The establishment of the national and provincial structures of the framework requires facilitation and involvement of the member agencies in developing terms of reference, standard operating procedures, and implementation. Development of the framework for local arrangements and engagement with NGOs and civil society also requires facilitation and support over a three-year timeframe and on-going to establish capacity and momentum for sustainable risk reduction measures at the community level.
- (6) *Provincial and community awareness and disaster risk management education.* There are large gaps among national government, provincial government, and communities where actions to reduce risk are largely implemented. Given the large geographical, cultural, and economic disparities that exist within the Solomon Islands, bridging these gaps will be a formidable task. It is generally agreed within Government that a critical first step is a concerted effort at awareness raising and

education targeted at the provincial and community level. A pilot program is achievable within three years.

- (7) *Support the implementation of DRR activities and pilot investments in priority sectors and at community level.*

The above 7 opportunities for support were then subjected to a *second filter* by asking the question, *Which of the opportunities are already or are likely to be supported by other donors and agencies?* The intent of applying this second criterion was to determine where the World Bank could add value in a coordinated and harmonized manner through other players in the region. Opportunity (6), *provincial and community awareness and disaster risk management education*, fell into this category, at least in part. The EU program for provincial disaster centers includes provincial-level capacity building for disaster management and training and public awareness campaigns related to disaster coordination. On this basis, the 6 remaining priority activities can be viewed as complementary and therefore as opportunities for the World Bank to add value.

In Annex A, each of these 6 opportunities is expanded to provide preliminary information on, for example, indicative costs, timeframes, and first-order actions and tasks. This information is intended to be sufficient for the development of detailed proposals and terms of reference should the World Bank wish to pursue these opportunities for investment further. ❖

Annex A. Proposals for Support in Solomon Islands

Proposal:	S1 Review Hazard and Establish Volcano Monitoring & Early Warning System			
Country/Sector:	Solomon Islands: Settlements			
Goal and purpose:	Settlements at reduced risk from volcanic events, through monitoring and early warning arrangements			
Scope:	Volcanic hazards in four areas.			
Lead agency:	MME, with NDMO - linked to sub-regional MVN initiative			
Cost and duration:	US\$440,000 over 2 years			
Hazards targeted	Risk reducing measures	Key gaps/barriers	Tasks	Cost US\$k
Volcanic eruptions Tsunami	Avoidance of high-risk zones Warning and evacuation	Lack of information on volcanic hazard risks Lack of volcanological monitoring capability Inadequate integrated warning and response plans for at-risk areas	Risk assessments for Savo, Tinakula, Kavachi, and Simbo volcanoes and identification of appropriate monitoring and warning regimes Establishment, as appropriate, of 2 permanent volcanic monitoring stations and 2 mobile systems incl. seismometers, probes, thermometers and gas monitoring equipments. Training in volcanic monitoring, equipment maintenance and data analysis Development of alert and response system for volcanic crisis.	80 300 20 40
				Time-frame
				June 2009 June 2010 Sept 2010 Dec 2010

Continues

Annex A. Proposals for Support in Solomon Islands *Continues*

Proposal:	S2 Establish Integrated Hazards Information System and Tools (with GIS capability)				
Country/Sector:	Solomon Is: 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:	Climate Change Division, NDMO with hazard advisors and sector users				
Cost and duration:	US\$0.5M over 12months				
Hazards targeted	Risk reduction measures	Key gaps/barriers	Tasks	Cost US\$M	Time-frame
Wind, storm surges SLR 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. Most hazard information is still hard-copy based and of questionable standard. Limited capacity for information system management Weak hardware and software computing capacity Limited tools and models for resource managers	Develop and adopt a Hazards Information Policy Identify long-term storage requirements, analysis tools and mapping needs Acquire appropriate computer hardware, software and high speed Internet connection Support capacity building through populating the information system with available historical data and undertaking vulnerability mapping and risk modeling and for climate change & risk prediction Develop a hazards strategic plan and undertake capacity development within the hazards group including but not limited to: hazard mapping of key hazards, development of an integrated hazards information system with risk and vulnerability tools, undertaking risk and vulnerability assessments for identified sector clients Establish minimum requirements for the Solomon Is observation networks (particularly for the meteorological and hydrological monitoring) and progressively upgrade in conjunction with other regional program.	0.1 0.2 0.2	Year 1 Year 2 Year 3

Annex A. Proposals for Support in Solomon Islands *Continues*

Proposal:	S3 Develop Guadalcanal flood plain management regime and warning system				
Country/Sector	Solomon Islands: Settlements, Hydrology				
Goal and purpose:	Sustainable settlements and land-use, by providing spatial flood risk information and a warning/response for a flood plain currently experiencing rapid development				
Lead agency:	MME with Meteorological Service and NDMO with Water, Meteorological Service				
Cost and duration:	US\$0.7M over 3 years				
Hazards targeted	Risk reducing measures	Key gaps/barriers	Actions and tasks	Cost US\$M	Time-frame
Flooding	<p>Early warning and evacuation</p> <p>Avoiding settlement in high risk zones</p>	<p>Limited spatial knowledge of present and future risks of flooding</p> <p>Lack of warning and response system</p>	<p>Review of the existing Guadalcanal Plain Flood Hazard Maps and update as required, including additional flood risks from scenarios of future climate change.</p> <p>Develop flood warning and response system, including:</p> <ul style="list-style-type: none"> Establish a telemetric river gauge and rainfall network for 3 rivers (Lunga + 2 others) incl. 2 stream gauges and 4 rain gauges per catchment Develop network for communication and dissemination of warnings. Develop local flood response and evacuation plans <p>Develop floodplain management plans</p>	<p>0.1</p> <p>0.5</p> <p>0.1</p>	<p>Year 1/ 4 mths</p> <p>Year 2/ 9 mths</p> <p>Year 3/ 4 mths</p>

Annex A. Proposals for Support in Solomon Islands *Continues*

Proposal:	S4 Support the Climate Change Division for development of a climate change adaptation policy, governance arrangements and action plans				
Country/Sector:	Solomon Islands; multi-sector				
Goal and purpose:	A national climate change adaptation policy and action plan, by providing technical assistance to the Climate Change Division for effective development and timely government approval.				
Scope:	National policy				
Lead agency:	MECM, Climate Change Division departments				
Cost and duration:	US\$0.2M over 2 years				
Hazards targeted	Risk reducing measures	Key gaps/barriers	Tasks	Cost US\$M	Time-frame
Climate-related hazards, including floods, droughts, tropical cyclones.	Multiple, according to hazard and sector at risk	Lack of capacity within government to progress policy development arrangements	Develop a whole-of-government policy on CCA identifying goals, roles, and accountabilities and integrated with NDC arrangements. Establish the Climate Change Division as the designated national authority Facilitate a government-level awareness program addressing the political and departmental level Support the implementation of the NAPA with actions identified across agencies – 2 months per year for 3 years	0.1 0.05 0.2	Year 1 Year 1 Year 3

Annex A. Proposals for Support in Solomon Islands *Continues*

Proposal:	S5 Support the implementation and integration of the new institutional framework of the NDC including climate change adaptation		
Country/Sector:	Solomon Islands; multi-sector		
Goal and purpose:	An effective and sustainable set of arrangements for DRM and CCA through national agencies and provincial government and into communities with strong linkages to civil society.		
Scope:	National, provincial, and local arrangements for government, private sector and civil society		
Lead agency:	Prime Minister's Office as chair of the NDC, NDMO, and MECM, Climate Change Division		
Cost and duration:	US\$0.3M over 3 years		
Hazards targeted	Risk reducing measures	Key gaps/barriers	Tasks
All hazards	Multiple, according to hazard and sector at risk	Commitment to the institutional framework, capacity at national and provincial levels and resource to provide sustained support	<p>Develop the NDC legislation to give effect to framework and new National Disaster Plan</p> <p>Facilitate the establishment of national and provincial structures with members in developing terms of reference, SOPs and exercising—3 months technician assistance per year for 3 years</p> <p>Develop and implement the framework for local arrangements and support NGOs and civil society.</p>
			<p>Cost US\$k</p> <p>0.05</p> <p>0.2</p> <p>0.1</p>
			<p>Time-frame</p> <p>Year 1</p> <p>Year 2</p> <p>Year 3</p>

Annex A. Proposals for Support in Solomon Islands

Proposal:	S6 Undertake DRR activities and investments within priority sectors and at the community level				
Country/Sector:	Solomon Islands; multi-sector				
Goal and purpose:	Implement DRR activities and pilot investments in priority sectors and at community level				
Scope:	National, provincial and local arrangements for government, private sector and civil society				
Lead agency:	Prime Minister's Office as chair of the NDC, NDC, NDMO and MECM, sector ministries				
Cost and duration:	US\$1.6M over 3 years				
Hazards targeted	Risk reducing measures	Key gaps/barriers	Tasks	Cost US\$M	Time-frame
All hazards	Multiple, according to hazard and sector at risk	Commitment to the institutional framework, capacity at national and provincial levels and resource to provide sustained support	Implementation of priority activities across sectors, levels of government, private sector, and at the community level, including but not limited to improving end-to-end early warning arrangements, developing and widely disseminating risk maps, undertaking provincial- and community-level DRM programs in conjunction with NGO and local community groups, encouraging private sector in DRR activities, and promoting sustainable use and management of ecosystems (including through better regulation of land-use), and reducing risk and vulnerabilities	0.1 0.8 00.7	Year 1 Year 2 Year 3
			Support development and implementation of a wireless broadband communication network across 9 provinces to support DRM arrangements and early warning systems. Such a network would also support hazard observation monitoring networks, and rural development, livelihood, and welfare sector programs. The network would comprise up to 7 satellite-receiving stations and microwave spine systems with local village networks on a village ownership business model and be installed in association with technical co-sponsors.		

Annex B. Project Team and People Consulted

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**In bold, GFDRR Donors*