

INSTITUTE FOR SUSTAINABLE FUTURES &
WORLD HEALTH ORGANIZATION COLLABORATING CENTRE FOR NURSING MIDWIFERY
AND HEALTH DEVELOPMENT

UNDERSTANDING THE PACIFIC'S ADAPTIVE CAPACITY TO EMERGENCIES IN THE CONTEXT OF CLIMATE CHANGE COUNTRY REPORT: SAMOA



ABOUT THE AUTHORS

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Understanding the Pacific's adaptive capacity to emergencies in the context of climate change

Country Report: Samoa

Prepared for: National Climate Change Adaptation Research Facility (NCCARF)

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Understanding the Pacific's adaptive capacity to emergencies in the context of climate change

Research outputs in this series:

FULL RESEARCH REPORT:

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COUNTRY REPORTS:

- Country Report – Vanuatu
- Country Report – Samoa
- Country Report – Fiji
- Country Report – Cook Islands

POLICY BRIEFS:

- Understanding the Pacific's adaptive capacity to emergencies in the context of climate change: Policy Brief for Australian Stakeholders.
- Understanding the Pacific's adaptive capacity to emergencies in the context of climate change: Policy Brief for Pacific Regional Stakeholders.
- Understanding the Pacific's adaptive capacity to emergencies in the context of climate change: Policy Brief for Pacific Island Country stakeholders.

BACKGROUND REVIEWS:

- Background Review: Disaster Response System of Four Pacific Island Countries.
- Projected climate change impacts in the Pacific: A summary.
- Review of Australia's Overseas Disaster and Emergency Response Sector.

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EXECUTIVE SUMMARY

INTRODUCTION

Climate change is likely to affect the pattern of some disasters in the Pacific, and therefore the organisations and systems involved in disaster response. This research, conducted by researchers at the University of Technology, Sydney, focused on how the immediate humanitarian needs following disasters are met by various stakeholders, both in the affected country and those offering support from outside. The research sought to understand the adaptive capacity of both Pacific island countries (PICs) and Australia's disaster response to a potential increase in disasters driven by climate change. This report provides results for Samoa – one of four case study countries selected for deeper analysis. See institute websites for our full research report which includes details of all case study countries.

The research was guided by the following research questions:

1. What constitutes the 'disaster response system' (DRS) for the immediate humanitarian needs post-disaster (health care, water and sanitation, psychosocial needs and food and nutrition) in each of the 4 case study PICs (including the Australian component to this response)?
2. How do various inter-organisational determinants serve to strengthen or reduce adaptive capacity of the 'disaster response system'? This question considers Australia's response obligations, national, regional and international stakeholders and the mechanisms that coordinate their actions, and other regional examples.
3. Which objective and subjective determinants are most significant in influencing the adaptive capacity of the organisations within the 'disaster response system'? What are the characteristics of an organisation with high levels of adaptive capacity?

RESEARCH METHODS AND APPROACH

A qualitative methodology, with a strong focus on participatory stakeholder engagement, was used for this research. The concept of 'adaptive capacity' was used to assess the resilience of individual organisations and the robustness of the broader system of response. Specific determinants of adaptive capacity were used to assess the 'disaster response system' (DRS), comprised of actors and agents from government and non-government sectors, governance structures and the formal and informal networks that support them. Background literature reviews, stakeholder workshops and key informant interviews with Australian, New Zealand and Pacific based stakeholders within the disaster, climate change, health and development sectors were used to assess the complexities of the DRS in selected Pacific island countries. Emphasis was placed on four immediate humanitarian post-disaster needs: health care; water and sanitation, psychosocial, food and nutrition.

SAMOA DISASTER RESPONSE SYSTEM

Key organisations and supporting policies / plans active in supporting disaster response, as identified by in-country stakeholders in Samoa include the following:

| Key Organisations | Key Legislation, Policies and Plans |
|--|--|
| <ul style="list-style-type: none"> • National Disaster Council (NDC) • Disaster Management Office (DMO) • Ministry of Works, Transport and Infrastructure • Ministry of Health (and its National Health Service) • Samoa Water Authority • Ministry of Agriculture and Fisheries • Ministry of Foreign Affairs and Trade • Ministry of Works, Transport and Infrastructure • Ministry of Education, Sports and Culture • Ministry of Finance • Ministry of Women, Community and Social Development, which has links to the local village level governance • Donors: AusAID, NZAID, Japanese International Cooperation Agency (JICA) • UN Agencies: (UNDP, UNESCO, UN-FAO, WHO, WMO,) • Samoa Red Cross Society (SRCS) • Samoa's Umbrella for Non-Government Organisations Inc. (SUNGO) • Village Councils and village organisations • Samoa Council of Churches | <ul style="list-style-type: none"> • Disaster and Emergency Management Act, 2006 • National Disaster Management Plan 2006 – 2009 (NDRMP) • National Tropical Cyclone Plan 2006 • National Avian and Pandemic Influenza 2008 • National Tsunami Plan 2008 • The Planning and Urban Management Agency Act 2004 • Ministry of Works Act 2002 • The Fire and Emergency Services Act 2007 • National Standards for Nursing and Midwifery Practice. • The Ministry of Health (MoH) /National Health Service (NHS) Service Continuity Emergency Plan • National Adaptation Programme of Action (NAPA) 2005 |

Leadership throughout the disaster response structure was viewed by participants as being strong and effective. The decision makers include all levels of society from the villages, provincial authorities, and district authorities up to national authorities and feed information both ways. The UN Office for the Coordination of Humanitarian Assistance (UNOCHA) cluster system has been incorporated at a national level to fit within the existing national disaster structure. The involvement of a wide range of stakeholders from across all levels of society demonstrates strategic leadership and disaster management, and is evidence of the resilience of the Samoan DRS.

HUMANITARIAN NEEDS

A summary of organisations and response mechanisms in Samoa relating to the four post-disaster humanitarian needs covered in this research is provided below.

| Health Care | Psychosocial Needs |
|--|---|
| <ul style="list-style-type: none"> • Clearly defined disaster response policies and processes were in place, supported by National Development Strategy. • Clear guidelines in place for registration of incoming health professionals during disasters; considerations being given to how to fast-track the process; • The health sector was a key stakeholder in the DRS however internal issues may be affecting | <ul style="list-style-type: none"> • Inadequate capacity to meet post-disaster psychosocial needs; • There was heavy reliance on traditional systems, faith based organisations for psychosocial support. • The lack of psychosocial support services for was quite evident in past responses and likely exacerbated by the magnitude of the impact of the most recent major disaster (2009 tsunami) |

| | |
|--|--|
| <p>the strength of their coordination and involvement;</p> <ul style="list-style-type: none"> • The health sector had strong leadership and external support systems from government and donors; • Multi-tasking of health workers to address HRH capacity needs; • Inadequate capacity to address psychosocial needs post-disaster; • Limited capacity for Triage and emergency medical care, post trauma counselling- priority areas for training. • Limited HRH capacity resulted in low availability for disaster response in rural/remote and poor urban socioeconomic areas. • Capacity to deal with infectious disease outbreaks after disasters was limited. | <ul style="list-style-type: none"> • Psychosocial support was needed for communities affected by disasters, including key community leaders who were important points of contact for incoming support. • Psychosocial support was also needed for disaster response personnel, including health workers, offering the support. |
| <p>Food & Nutrition</p> | <p>Water, Sanitation & Hygiene (WASH)</p> |
| <ul style="list-style-type: none"> • Immediate food and nutrition needs post-disaster were addressed through several avenues, however organisation of this process was needed particularly to reduce duplication. • Widespread concerns were expressed for food and nutrition needs and were mainly related to long term food security needs in the context of climate change. • There was evidence of efforts by the Government (mainly Ministry of Agriculture) and some NGOs to address long term food security through the introduction of several agriculture and livelihoods programs. • | <ul style="list-style-type: none"> • WASH, was an ongoing issue in Samoa which was exacerbated during times of disaster. • Several sectors were involved in the delivery of WASH, however coordination among the WASH sector needs to be improved |

KEY DETERMINANTS OF ADAPTIVE CAPACITY

Samoa, unlike other PICs has its population concentrated on two main islands. The strong leadership from all levels of society from the villages up to national levels was also evidenced by active involvement in the DRS at all levels, and were crucial determinants of adaptive capacity. The key determinants of adaptive capacity for Samoa that were most significant were traditional and social practices; resource capacity; leadership and management; and tools, methods and approaches.

Traditional and social practices

Traditional and social practices were important areas that were supported the adaptive capacity of the Samoan DRS and broader society to respond to disaster. In Samoa, agricultural and subsistence practices were considered important for the long term food security of the population. There was evidence that the government, NGOs and the community were looking at ways to address long-term food supply and security in the context of climate change. Strong community

“We are introducing crops that are drought tolerant and healthy at the same time. We are also introducing composting, financial training and assistance in finding markets to sell the produce as well.”

“Faith based systems and their interventions were already entrenched in the social system so people were able to turn to these during the tsunami. This is why people were more resilient than expected; they were able to recover quickly because of these social groups.”

leadership and support systems in Samoa enabled people to bounce back from the effects of disasters leading to enhanced adaptive capacity. Both government and NGO interviewees indicated that the faith based belief systems (mainly Christianity) in Samoa have built resilience in people and serves to provide strong elements for supporting their adaptive capacity. Unfortunately, poor dietary practices resulting in non-communicable diseases, indiscriminate fishing practices decreasing fish populations and a high cost of living resulting in reliance on remittances were likely to affect long term food security and further undermine adaptive capacity.

Resource Capacity (human resource, financial and technical)

Limited financial, human and technical resources for disaster response were identified as a challenge in Samoa. However these limitations were more pronounced with respect to health care resources, and could constrain the adaptive capacity of the health sector.“

Financial capacity, the organisation and distribution of funds was also noted as a weakness of the DRS in past responses. Efforts

to address the financial capacity issues include the establishment of an Aid Coordination Unit to ensure transparency and accountability and the developing a Climate Change Framework for the systematic channelling of donor funding for climate change initiatives.

“We need to develop the capacity of staff at the divisional level to treat victims and how to determine when it’s relevant to recommend patients to the central hospital; this will then reduce the burden on staff at the main hospitals”
“The Ministry of Finance is developing a Climate Change Framework for Samoa and will look at how to better channel donor funding. We can pool funding from other programmes and that is part of our flexible structure”

Leadership, management and governance

The DRS in Samoa was described as having strong leadership and management, with several strengths and weaknesses identified. Strengths in leadership and management included: good representation of all stakeholders on the DAC, inter-sectorial collaboration and community participation, and a well organised NDMO.

However, various weaknesses highlighted include: financial

management, lack of communication between sectors, under resourced NDMO, and coordination of the NGOs. Coordination of disaster response is reliant on a combination of communications and existing relationships. However respondents suggested there were some areas that needed strengthening. These include: strengthening lines and channels of communication and risk communication; (ii) strengthen partnerships in terms of commitment and team work; (iii) clearly identify roles and responsibilities of each organisation, and (iv) communication of procedures to NGOs through better explanation of the Disaster Management Plan and clear identification of NGO roles during disaster and emergency and facilitate ongoing awareness of these roles.

“They [NDMO] have a very good disaster management plan, but few staff. They depend highly on their very well skilled DMO manager but if this person is away then this becomes a major issue.”

Tools, methods and approaches

“We are fostering self-reliant communities because they are the first responders. This is done through training and drills, coordinated by the Village Teams and monitored by the Red Cross.”

Various tools methods and approaches have been incorporated that serve to enhance the adaptive capacity of the DRS in Samoa. These include a concentration on preparation through training, drills, early warning systems, capacity building, and prepositioning of emergency supplies. This is coordinated through a whole of government/ whole of country approach to address all hazards, and includes risk management and recovery.

The country is also looking at improving early warning systems including training in some sectors.

Other methods utilised by the government to increase the capacity of individuals and communities to withstand both short and long term implications of climate change are the introduction of stimulus packages for unemployed Samoans, where instead of providing money, they are taught skills in farming and gardening, provided with seeds and training. Several of these approaches focus on building the resilience of the population to withstand shocks and recover at a faster rate. Using lessons learned and building these lessons into methods and approaches such as training, drills, early warning systems, capacity building, and prepositioning of emergency supplies is evidence of adaptive capacity of the DRS.

CONCLUSION

The DRS in Samoa and the NDMO was considered to be strong in leadership and management. Strong traditional and social practices including the active involvement of village leadership, faith based organisations and strong family/social structures for the most part served to enhance adaptive capacity across levels of governance. These strengths were evidenced by informal and formal practices of equipping the communities with rules of engagement to follow when disaster strikes. However, a chronic lack of human, technical and financial resources could undermine the resilience and adaptiveness of the Samoan DRS. The DRS was therefore more vulnerable as resource constraints resulted in the health and emergency response system being over-stretched in times of disaster. The apparent lack of capacity and resources to address psychosocial needs of the community and response personnel was exacerbated by the impact of the most recent disaster.

Several lessons learned from past disasters were being discussed and implemented throughout the disaster response system, with tools, methods and approaches incorporated across all levels of the society including the government, NGOs and civil societies. However, many lessons were yet to be implemented and/or realised. Resource capacity would need to be improved in order to build long term adaptive capacity. Various policies and strategic planning were to be reviewed and strengthened in Samoa to include resource capacity, mainly to address psychosocial needs, emergency response training and technical capacity building for a more effective response and build long term adaptive capacity of the overall DRS in Samoa. The NDMO was to ensure that systems are in place to facilitate a structured post-disaster debrief that encourages a feedback of lessons learned from all agencies into national policy and planning processes. The Ministry of Health/National Health Services should ensure that adequate considerations are given to HRH needs for disaster response under a changing climate, in any new or revised National health plans or HRH strategic policies; and develop a strategic plan to ensure that adequate consideration and provisions are made to ensure that the specific psychosocial needs of disaster response personnel are met.

SAMOA COUNTRY REPORT

1. SETTING THE CONTEXT

Climate change is likely to affect the pattern of some disasters in the Pacific, and therefore the organisations and systems involved in disaster response. This research, conducted by researchers at the University of Technology, Sydney, focused on how the immediate humanitarian needs following disasters are met by various stakeholders, both in the affected country and those offering support from outside. The research sought to understand the adaptive capacity of both PICs and Australia's disaster response to a potential increase in disasters driven by climate change.

The primary objectives of the research were:

- To provide recommendations to policy makers and practitioners in the Pacific and Australian disaster and emergency response sectors on current adaptive capacity of PICs to climate related disasters (e.g. tropical cyclones, floods, droughts, storm surge), and identify the resources, policies and systems needed in the coming years to enhance this capacity;
- To inform improved planning and more effective response through analysis of the Australian emergency services and related organisations' capacity, role and obligations to assist PICs in times of disaster.

The research was conducted in 2012 and had a strong focus on participatory stakeholder engagement through extensive interviews, workshops and guidance from a Project Reference Group. Four case study countries (Fiji, Cook Islands, Vanuatu and Samoa) were chosen for deeper investigation of the range of issues present in the Pacific. The purpose of this report is to provide country specific results of the research for Samoa.

The Pacific region is vulnerable to a range of natural hazards including tropical cyclones and storms, droughts, earthquakes, tsunamis, floods, volcanoes and wave surges. The capacity of PICs to cope with these hazards is often challenged, due to their inherent vulnerability stemming from the isolation, small size, insularity, environmental factors and limited disaster mitigation capacity (Meheux et al., 2007). As such, natural disasters occur relatively frequently in the Pacific, with significant economic and social impacts.¹

Pacific Forum Leaders have committed to reducing disaster risks through various declarations and frameworks, including the Pacific Disaster Risk Reduction and Disaster Management (DRR and DM) Framework for Action (SOPAC, 2009). The Pacific DRR and DM Framework sets out six themes and includes guiding principles and expected outcomes by 2015, and contributes to global progress in achieving goals of the Hyogo Framework for Action 2005-2015 – which is the principle international guiding framework for disaster risk management (UNISDR, 2005).

In times of disaster, it is the responsibility of the national government to respond to the needs of the population. In the Pacific, effective response is made more complex than in other regions due to reasons such as (Kennedy and Muller, 2008):

- Potential remoteness of the affected area
- Relatively small number of people affected (high cost per person due to relatively low population density and multiple remote locations)

¹ Hay and Mimura, 2010; data from EM-DAT: The OFDA/CRED International Disaster Database – www.emdat.be – Université Catholique de Louvain – Brussels – Belgium

- Ability of natural hazards to overwhelm local and national capacity to respond
- Logistical constraints, affecting timeliness and assessment challenges
- Coordination challenges of regional organisations

Effective institutions and guiding policies are necessary to provide a coordinated and effective response to disasters. Specific indicators important at the national government level that are identified as important in effective disaster response include (UNOCHA and UNISDR, 2008):

- A disaster risk reduction and disaster risk management implementation plan based on assessment of hazards and risks
- A national platform to promote coordination and sharing of information, and to harmonise capacity
- Adequate resource allocation across all levels
- National plans including community capacity and inclusion of specific vulnerable groups
- Disaggregated population data.

This report takes some of these elements into consideration in an attempt to provide a broader understanding of Samoa's national capacity to respond to disasters. This report seeks to describe specific elements of the Samoan DRS and the institutional capacity to respond to disasters under a changing climate.

2. RESEARCH METHODS

A qualitative methodology, with a strong focus on participatory stakeholder engagement was used for this research. The research was guided by a Conceptual Framework (see Figure 1) which was developed to provide the scope for this study.

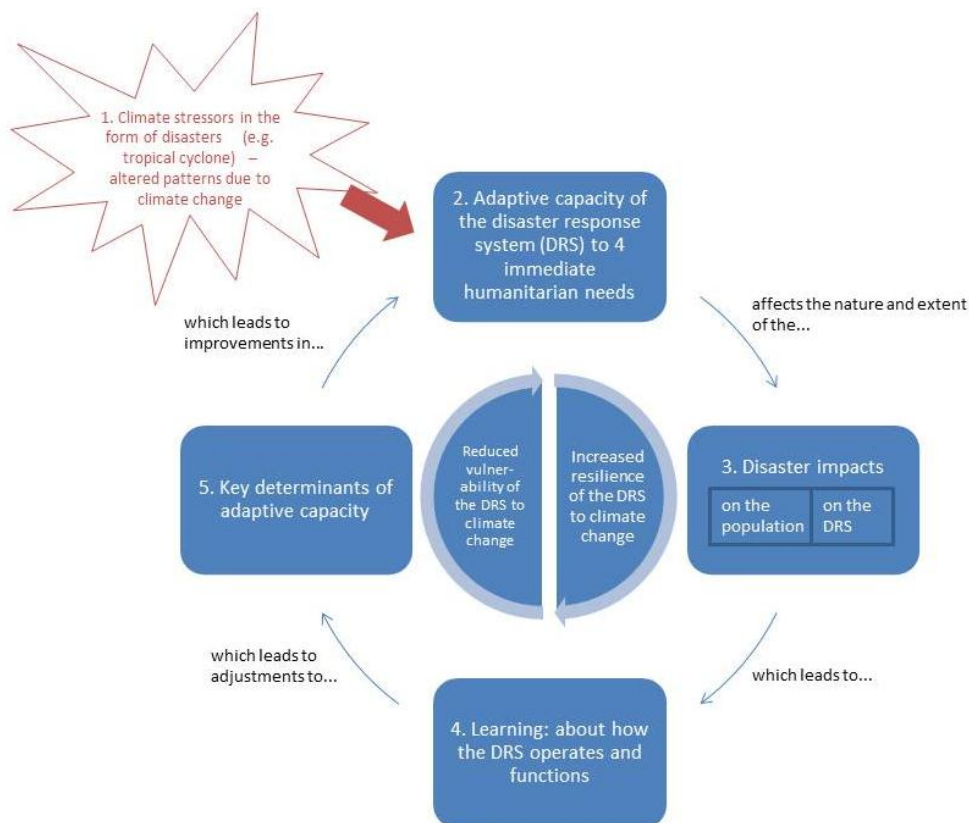


Figure 1: Conceptual Framework

The Conceptual Framework describes a cycle of adaptive learning within which the adaptive capacity of the DRS is affected by a range of key determinants (Ekstom et al., 2012). The DRS is defined, in the scope of this research, to be the organisations and mechanisms responsible for responding to the four immediate humanitarian needs. The DRS is thus comprised of actors and agents from government and non-government sectors, governance structures and the formal and informal networks that support them. The concept of adaptive capacity² was used to assess the resilience of individual organisations and the robustness of the broader system of response.

Specific determinants of adaptive capacity were used to assess the 'disaster response system' (DRS). Key determinants were defined as being inter-organisational, intra-organisational and objective and subjective. A list of the key determinants of adaptive capacity used in the research is provided below.

- Architecture
- Agency
- Adaptiveness
- Access to assets
- Leadership, management and governance structures
- Technical capacity, tools, methods and approaches
- Health workforce education, training and continuing competence
- Human resource for health governance and management systems
- Risk Perceptions
- Self-efficacy beliefs
- Silo mentality
- Communications and relationships
- Strategic vision and outcome expectancy
- Information and knowledge
- Elements of social practice

Background literature review, stakeholder workshops and key informant interviews with Australian, New Zealand and PIC stakeholders within the disaster, climate change, health and development sectors were used to assess the complexities of the DRS in selected PICs. Emphasis was placed on four immediate humanitarian needs: health care; water and sanitation, psychosocial, food and nutrition.

A total of 18 interviews were completed in Samoa with donors, government and non-government organisations (NGOs). Interview and workshop results were drawn together with desktop review results during the data analysis phase. Key informant interviews' transcripts were subjected to an inductive thematic analysis for general patterns and emerging issues. Interview transcripts were analysed using qualitative software, and coded for specific themes based on the conceptual framework. Key determinants of adaptive capacity of the disaster response system were identified based on triangulation of data from multiple sources. Results were analysed thematically and recommendations made accordingly.

² Adaptive Capacity - The ability of a system to adjust to climate change (including climate variability and extremes), to moderate potential damages, to take advantage of opportunities, or to cope with the consequences. (IPCC TAR, 2001)

3. COUNTRY BACKGROUND

Samoa has a population of 187,820 (Samoa Bureau of Statistics, 2011) and is located in the south west Pacific. Neighbouring countries include Niue and Tonga to the south, Cook Islands to the south-east and Fiji to the south-west. Samoa's location is considered to lie within the cyclone-belt, and also is in close proximity to the Tongan Trench which is a known earthquake-generation zone (UN Conference on Trade and Development, 2006). Samoa is comprised of two main islands, Upolu and Savai'i, which are of volcanic origin, and several smaller islands. Samoa is a Polynesian country and has an estimated population of 217,000 (Daly et al., 2010).

The United Nations Development Programme (UNDP) Human Development Index (HDI) ranks Samoa 99th out of 187 countries. Despite its modest HDI, Samoa is still listed as a Least Developed Country (LDC); a topic of much discussion with the United Nations for several years. However the Government of Samoa (GoS) is pushing the UN for an extension of its graduation, in part due to the devastating nature of the 2009 tsunami, with the new date for graduation from LDC status scheduled in 2014 (UNDESA, 20092).

3.1 Climate change impacts on disasters in Samoa

Recent scientific projections indicate that Samoa's temperatures are likely to increase by up to 1°C by 2030 (high emission scenario) while sea level is predicted to rise by between 5-15cm (high emission scenario) by 2030 (Australian Bureau of Meteorology and CSIRO, 2011). Rainfall is likely to increase in the wet season and decrease in the dry season, while extreme rainfall days are likely to occur more frequently (Australian Bureau of Meteorology and CSIRO, 2011). Tropical cyclones are predicted to occur less frequently, but there is expected to be an increase in the proportion of severe storms (Australian Bureau of Meteorology and CSIRO, 2011). Recognising these projections carry significant uncertainty, this means that while there may be fewer intense tropical cyclones, there may also be an increased frequency of response required to deal with severe storms which cause damage through flooding, high winds and storm surge. This would activate the disaster response system on a more frequent basis than is currently the case with potentially less time in between such events (see Gero et al., 2012).

3.2 Human Resources for Health (HRH) capacity in Samoa

Samoa has a relatively low HRH capacity with a HRH Density of <1 per 1000 population for physicians, nurses and midwives (WHO 2011). The impacts of climate change may further stretch the resources capacity of PIC's disaster response systems through more frequent and intense events (Gero et al., 2012).

3.3 Key disaster response organisations in Samoa

The National Emergency Operation Centre (NEOC) is the operational centre from which disaster response is coordinated.

The Disaster Advisory Committee (DAC) is comprised of government, private sector and civil society stakeholders and is responsible for ensuring the National Disaster Management Plan is publicised and reviewed regularly (Government of Samoa, 2006a). The DAC is responsible for coordinating an inter-agency approach to disaster planning, risk reduction, preparedness, response and recovery activities. All DAC members are responsible for risk reduction activities and coordinated recovery activities.

The National Disaster Council (NDC) is also comprised of members of the Cabinet, with four members constituting a quorum for decisions made by the NDC (Government of Samoa, 2006a). The Chief Executive Officer of the DAC also attends NDC Meetings, acting as a liaison between the two committees. The NDC is responsible for providing advice on proclaiming and rescinding national State of Emergencies. The NDC also oversees the implementation of the National Disaster Management Plan during disasters (Government of Samoa, 2006a).

Disaster Management Office (DMO) is part of the Ministry of Natural Resources and Environment (MNRE), with the CEO of MNRE acting as head of the DMO. The DMO is responsible for providing facilities for a National Emergency Operations Centre (NEOC), which is considered to be the disaster coordination centre under the Disaster and Emergency Management Act.

MNRE is land registrar for Samoa, host of the Climate Data Centre and the Meteorology Office.

The Fire and Emergency Services Authority and the Police Service are members of the DAC and have specific responsibilities regarding fire and emergency related events.

Additional government ministries all have roles to play in disaster response and coordination. All ministries are required to develop Disaster Response Plans (see for example – Ministry of Works, Transport and Infrastructure, 2011). Such ministries include:

- Ministry of Health (and its National Health Service);
- Samoa Water Authority;
- Ministry of Agriculture and Fisheries;
- Ministry of Foreign Affairs and Trade;
- Ministry of Works, Transport and Infrastructure;
- Ministry of Education, Sports and Culture;
- Ministry of Finance,
- Ministry of Women, Community and Social Development, which has links to the local village level governance.

Samoa Red Cross Society (SRCS) and the Government of Samoa have a memorandum of Understanding (MoU) dating back to 1983 which recognises the Red Cross as a voluntary disaster relief organisation auxiliary to the public authorities and with specialist medical expertise (Samoa Red Cross Society, 2009).

Samoa's Umbrella for Non-Government Organisations Inc (SUNGO) is the coordinating body of NGOs in Samoa and plays a role in disaster response in various ways. SUNGO is also active in organising and participating in training programs relevant to disaster response (see <http://www.sungo.ws/>).

Village Councils and village organisations are important stakeholders in disaster preparedness and response, and liaise with the Ministry of Women, Community and Social Development for support and linkages to the DAC.

Samoa Council of Churches is also an important stakeholder in disaster response, given the high proportion of Samoans who identify strongly with the Church. Several United Nations (UN) agencies have regional offices in Samoa which are responsible for a number of countries neighbouring the Samoan islands. WHO, UNDP, FAO, UNESCO and WMO all have a presence in Apia and are also active in disaster response.

Donors such as AusAID and New Zealand Aid Programme are also active in times of disaster response and coordinate with national institutional arrangements as necessary (e.g. through the DAC).

Other organisations provide services considered critical to effective disaster were also identified by workshop respondents in Samoa such as as donors, and providers of scholarships for disaster training including Rotary, New Zealand Aid Programme, UNDP, WHO, JICA.

The institutional structure including the above organisations is illustrated in the Figure 1.

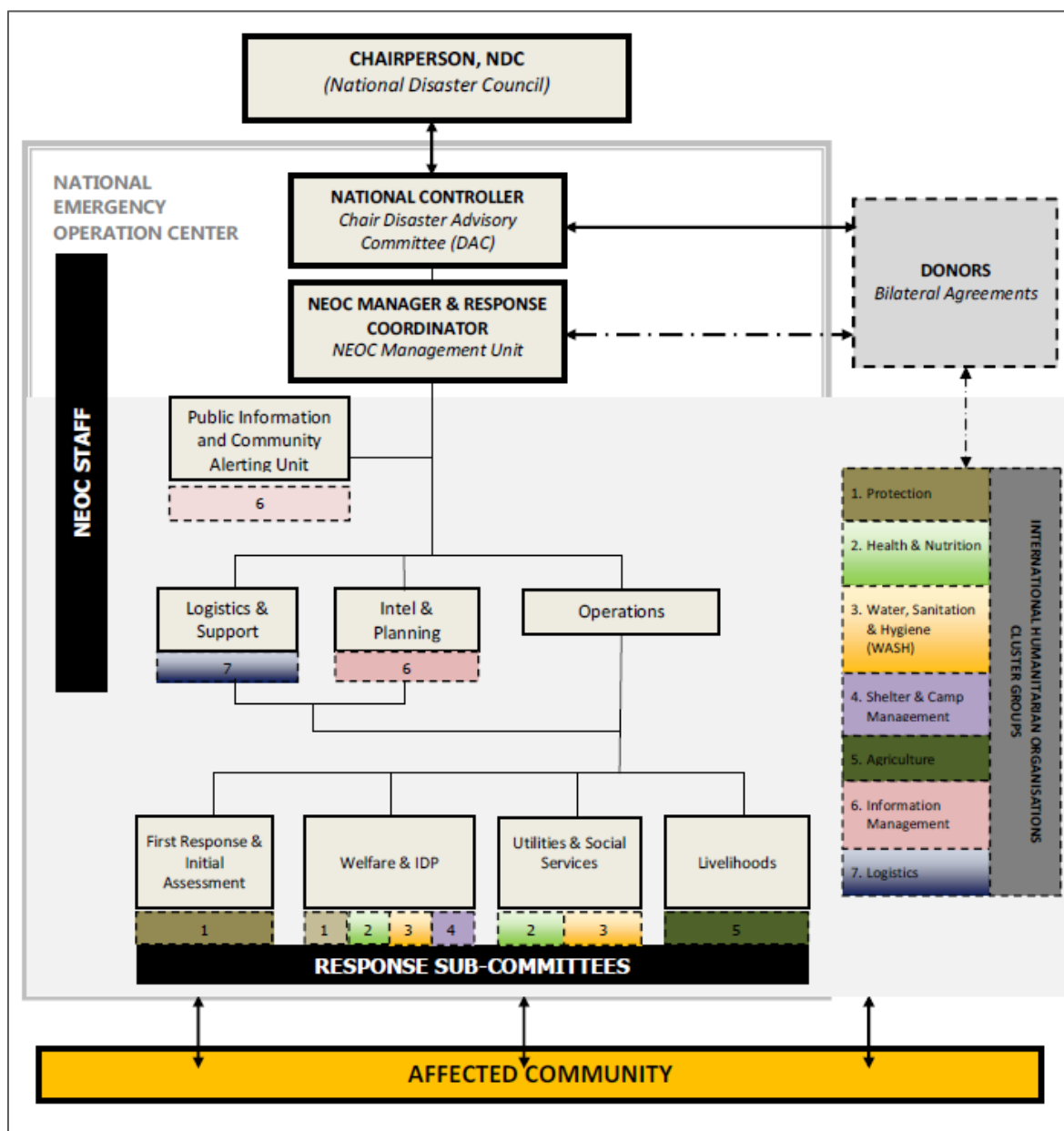


Figure 2: Samoa disaster coordination system

(Source: Government of Samoa, 2011)

Box 1 provides an example of past disaster response, and describes some of the roles of organisations included above

Box 1: Example of past response in Samoa

Samoa is considered to be at high risk from tropical cyclones, particularly during El Niño periods (MNRE, 2005). The most significant tropical cyclones to affect Samoa were Tropical Cyclones Ofa and Val in 1990 and 1991 respectively. Associated costs from these events equalled four times the GDP, with the damaging winds, flooding and storm surge devastating agricultural crops, much of the country's infrastructure and resulting in high social costs as livelihoods were destroyed (MNRE, 2005).

However the 2009 tsunami was the focus for all the respondents in this research and while not directly induced by climate, is used as the example as it required the rapid response structures in the DRS to be implemented. On 29 September 2009, an earthquake measuring 8.2 on the Richter scale caused, within a matter of minutes, successive tsunami waves of up to 15 meters in height causing widespread destruction (OCHA, 2012). An estimated 3,000 Samoans had completely lost their homes and 2,000 houses suffered severe damage. With 143 people confirmed dead, and four people still missing, the tsunami response and associated recovery presented a major challenge to the nation of 217,000 inhabitants (OCHA, 2012).

After a request by Samoa, a United Nations Disaster Assessment and Coordination (UNDAC) Team provided coordination support to the emergency relief operations and initial assessments through a team from the Government of Samoa, Red Cross, NGO's, Australia, New Zealand and the UN Country Team . The Inter Agency Standing Committee, under the leadership of the Emergency Relief Coordinator, then activated the cluster system in Samoa (OCHA, 2012).

"AusAID was the first donor to be approached for funding. Teams from Australia were in country within 24 hours of the disaster, and a disaster response centre set up. This reflects the fact that the Government of Australia is ready and willing to assist. In the field Australian responders assisted with medical attention, search and rescue, and translation services" (AusAID).

The church played a large role in the DRS post tsunami. According to ADRA: "During the tsunami they distributed mainly clean-up tools. Church members donated a lot of money to the churches and they have links to the church leaders in each village."

However, according to Fire and Emergency Service (FES), coordination was a major issue: "During the last disaster, the country was not very organized, so the response wasn't well managed. People from overseas were going where they pleased. All organizations started out working on their own in different areas. At that time there were no policies in place to coordinate multi-stakeholder response. This became a major challenge and the need for an emergency operations centre was soon realized. The temporary EOC was set up in the field. The affected areas were then mapped using a grid, and each team was dispatched to a grid for thorough searching."

The MoH coordinating the health workforce were under-resourced and thankful for the incoming Samoan's who lived in New Zealand.

"They didn't have enough staff so there was a doubling up of responsibilities. An approach that worked well was the arrival of the Samoan Health Mission from New Zealand made of health nurses and professionals working in New Zealand. Their assistance fitted well as they knew the local context in terms of meeting psychosocial needs and knew of tools and medicines relevant to Samoa."

As the 2009 Tsunami was such a large scale and recent disaster it was fresh in the minds of interviewees during the time of this research and significantly informed their views.

4. HUMANITARIAN NEEDS

A summary of the DRS capacity relating to the four themes of the research in Samoa is provided below.

| Immediate Humanitarian Needs: | Responsible National Actors and Stakeholders |
|-------------------------------|---|
| Health Care | <ul style="list-style-type: none"> • Churches, Fire Authority, Ministry of Health, Rotary, private GPs, Red Cross, WHO, Village Council |
| Food and Nutrition | <ul style="list-style-type: none"> • Caritas, Churches, FAO, Ministry of Agriculture, Ministry of Health, Rotary, Nurses Association, Red Cross, SUNGO, Village Council |
| Water and Sanitation | <ul style="list-style-type: none"> • Caritas, Churches, Ministry of Health, Rotary, Nurses Association, Red Cross, SUNGO, Village Council, Ministry of Works, Transport and Infrastructure |
| Psychosocial needs | <ul style="list-style-type: none"> • Caritas, Churches, Ministry of Health, National Health Services, Rotary, Red Cross, SUNGO, Village Council |

4.1 Health care

Based on available development indicators, Samoa has a relatively low HRH capacity. The HRH Density is <1 per 1000 population for physicians, nurses and midwives (WHO 2011). The uneven distribution of health workers that results in low availability in rural/remote and poor urban socioeconomic areas is a particular problem in Samoa. A preliminary analysis by the Government of Samoa indicates that in addition to recruitment and retention of health staff, skills deficiencies and inappropriate distribution of the health workforce in some occupations is a major problem (Government of Samoa, 2011).

In times of disaster, health professionals from overseas are often requested to assist health services which are primarily delivered by the Ministry of Health and National Health Services, supported by WHO, several private health care providers and the Rotary Club. However in times of disaster, the HRH shortages in remote areas cause limitations, for instance an interviewee from ADRA stated: “During the tsunami the district hospitals couldn’t cope and everyone was transported to the central hospital.”

A weakness pointed out by one group of health care professionals indicated that the capacity to deal with infectious disease outbreaks after disasters was limited. “There will also be increases cases of water-borne and vector-borne diseases. Our capacity to monitor these isn’t very good in Samoa. We don’t have on-site testing kits in the peripheral hospitals; these are centralized in Apia which hinders early detection” (OUM, Samoa).

As it is, current health care needs are only partially dealt with by existing HRH capacity, therefore that already stretched capacity is insufficient to address both the immediate needs during a disaster and the long term health issues that ensue.

4.2 Water, sanitation and hygiene (WASH)

Within the context of disasters, according to the NDMO, the “*Ministry of Health (MOH) and National Health Services (NHS) are the lead in Water, Sanitation and Hygiene cluster.*” (NDMO, Samoa). However under the WASH Sub-Sector Master Plan, four sectors are

involved in the WASH sector: Ministry of Natural Resources and Environment (landfills), MOH (hygiene, water quality and food safety), Water Authority (Water Supply), Sewage Authority (Sewage) (Samoa Ministry of Works and Transport). Coordination among the WASH sector needs to be improved and WASH is an ongoing issue on Samoa:

“Water and sanitation was an issue because people moved inland after the tsunami into areas where there was no piped water system. The government had to find source of water (Lake). The recovery in Samoa [after the tsunami] was extremely quick, but it took almost a year to get a piped water system running in these villages” (New Zealand Aid Programme).

Water quality and supply is an issue in Samoa that needs addressing which is exacerbated during times of disaster and may have ongoing issues arising because of the changing climate.

“People in the remote villages are still using natural drinking water supplies such as rivers and streams as drinking water catchments so there is a need to study the water quality in these, especially from saltwater intrusion which we believe is causing increased rates of hypertension. If you are looking at capacity to respond to climate change then you need to look at these issues” (OUM).

Therefore WASH is a concern in Samoa both currently and for ongoing issues. Coordination needs improving within the WASH sector to facilitate the cohesion of the four areas involved.

4.3 Food and nutrition

Following a disaster, relief food items are provided using a multi-sectoral approach which includes all levels of civil society and the private sector. Food was donated by Pacific Council of Churches, New Zealand Aid Programme and other donors. However it is the church that plays the most integral role in providing food to the community in disasters.

“The Mormon church was the first to be on the ground when the tsunami hit as they had all the necessary resources in terms of food, clothing and money at the time of disaster. They were able to land helicopters and distribute food and clothing immediately, long before the Red Cross and Government came in to do their assessments. They opened up their church in the affected communities as places of shelter, immunisation as well as addressing psychosocial needs” (Min. of Agriculture).

While food is donated and distributed through several avenues, organisation of this process is needed particularly to reduce duplication.

The majority of respondents however discussed long term food security issues in the context of climate change as affecting their adaptive capacity. Several interviewees noted the government is actively addressing longer term food security and livelihoods through the introduction of several programs. For instance:

“The government programmes such as the food security projects are encouraging people to stay on the outer islands” (Samoa Council of Churches).

“After the tsunami, the government introduced a stimulus package for Samoans who were unemployed and instead of providing money they taught farming and gardening skills and provided seeds and training” (Nurses Association).

Several NGOs in Samoa are also involved in longer term food security and livelihoods projects. One example is the Women in Business that helped people affected by the tsunami to start planting crops such as lady finger bananas, yams and also built coconut oil manufacturing sites in some of the tsunami affected areas. Another example is ADRA that is helping communities through projects that improve livelihoods e.g., food security and income generation.

4.4 Psychosocial needs

In Samoa, the Mental Health Unit under the National Health System is the key point of contact to address the psychosocial needs of the community. Several other organisations are also involved including: The Red Cross Society, Village Councils, Churches/Council of Churches, Theological colleges and several local NGO groups. However, the provision of services to meet the psychosocial needs was considered to be inadequate, particularly in reference to the most recent disaster. The overall situation on psychosocial services was summed up by several respondents.

“We also need investment in post trauma counselling and education services for nurses. Currently this is not available. In general there are no facilities for proper counselling of people; it is good to document people’s stories about how they feel after an event. Mental Health Unit at time of tsunami did help out with counselling programmes but their capacity needs to be strengthened” (Samoa Nurses Association).

“Faith based systems and their interventions were already entrenched in the social system so people were able to turn to these during the tsunami. This is why people were more resilient than expected; they were able to recover quickly because of these social groups. However, we need more structures [and] systems to deal with psychosocial issues e.g. in child psychology, [as] we don’t have these skills in-country. After the tsunami a lot of people turned to substance abuse, alcohol abuse and domestic violence” (Samoa OUM).

The lack of psychosocial services affected both the community and first responders, including health care professionals. A few interviewees indicated that counselling services were not immediately considered for the actual responders. The need was recognized later and some organisations had to seek external assistance (from New Zealand Aid Programme) to provide psychological counselling for their employees. ADRA noted: *“The government sent councillors from Australia and New Zealand to counsel those that were affected. The workers and staff were also provided counselling.”*

“Psychosocial needs are a major challenge in disasters. Initially no consideration was given to this for either community or the emergency service providers. The MoH and the National Health Services along with some NGOs are the main actors in addressing psychosocial needs. NGOs mobilized church groups to assist with the psychosocial counselling. At some point during the tsunami response it was recognized that responders were also affected and needed counselling and so were invited to participate in the counselling program- including training for those involved in disaster response. It is not customary for the community to talk about their emotions as traditionally people don’t discuss personal issues. Pastoral Care was provided through the Theological colleges by trained personnel” (Min of Finance, Samoa).

The impact of the 2009 tsunami was still evident within the society and the memories were still quite fresh and personal for many respondents. It is therefore likely that the magnitude and impact of the disaster highlighted the large gaps in meeting psychosocial needs in Samoa as compared with other case study countries, whereas in fact other countries probably have similar needs.

5. KEY DETERMINANTS OF ADAPTIVE CAPACITY IN SAMOA

A key research question concerned identification of the most influential determinants on adaptive capacity of the DRS of each case study PIC, in this case Samoa. The themes discussed below were identified through a rigorous systematic coding process of all interview data, workshop data and observations from Samoa.

The four main key determinants identified as contributing to the adaptive capacity in Samoa, were (in order of influence): 1) traditional and social practices; 2) resource capacity; 3) leadership and management; and 4) tools, methods and approaches.

5.1 Traditional and social practice

Three main thematic areas emerged within the traditional and social practices as important areas that were either supporting or constraining the adaptive capacity of the Samoan DRS and broader society to respond to disaster. These are agricultural and subsistence practices; village leadership and community involvement; and church and belief systems.

Agriculture and subsistence practices

In Samoa, there was evidence that the government, NGOs and the community were looking at ways to address long-term food supply and security in the context of climate change. By increasing food security in normal times the population is better equipped to withstand a major disaster as their overall health is better and their livelihoods more secure. A majority of respondents indicated that the government is encouraging people to go back to traditional farming practices and diets and to move away from the processed foods and imported products. To this end, the Ministry of Agriculture has developed strategies to address food security. Some of these strategies and activities include: community-based agricultural projects; introduction of traditional foods into diets; promotion of organic farming; agricultural shows; and providing skills in marketing products. For instance:

“The Ministry of Agriculture has started agriculture shows that include farmer competitions to [encourage farmers to] display their produce and shows how people are involved in agriculture and food security” (Ministry of Agriculture).

Samoan NGOs including ADRA, Women in Business and Red Cross are also actively supporting food security and livelihoods projects. According to an ADRA representative, *“we are introducing crops that are drought tolerant and healthy at the same time. We are also introducing composting, financial training and [assistance in] finding markets to sell the produce as well.” (ADRA)*

However poor dietary practices resulting in non-communicable diseases and indiscriminate fishing practices decreasing fish populations were identified as factors that were likely to constrain the adaptive capacity of the country to meet their food and nutrition needs which would only be compounded during times of disaster.

Village leadership and community involvement

Several respondents indicated that strong community leadership and support systems in Samoa enabled people to bounce back from the effects of disasters leading to enhanced adaptive capacity. Coordination during times of disaster at the village level involves regular meetings, including schools, churches and the community at large. The Women's Committees at village level are key institutions for communities.

One NGO indicated that their programs are channeled through the village representatives who report directly to the Ministry of Women, Community and Social Development (MWCSD). *"The Ministry of Women, Community and Social Development ensures that government agents at local levels are mobilized in times of disaster to ensure relief reaches those in need and that data is fed to the national government."*

The fact that most Samoans own their own land enables them to relocate readily, should a hazard develop where they live. Policies are in place to guide the evacuation and relocation of persons and civil society and the community are aware of these and endorse them. The active involvement of traditional leaders and of the community in the planning and implementation of disaster response provides a strong foundation for a proactive approach to disaster preparedness. This strong leadership coupled with a strong family and village based system supports the adaptive capacity for disaster response.

Through lessons learned from the 2009 Tsunami several systems are in place at the community level:

"In Samoa we have a strong extended family system so we always have a strong support system" (NDMO, Samoa).

"A policy has been put in place [to ensure] that if an earthquake is serious enough to be felt, the community should immediately move to [the] identified sites at higher ground and NOT wait for official warning" (Min. Finance, Samoa).

"Everyone is instructed that once they hear the warning they should come to the shelter with their emergency backpacks (already prepared with emergency supplies to last 48 hours) and walk up to the Primary School. The people who live further inland are then instructed to vacate their places and move further inland to allow those moving from below to occupy their places" (Church of Jesus Christ of Latter Day Saints, Samoa)

The long term implementation of these plans is more likely to succeed as they are integrated into the culture of the community rather than driven by high-level policies; a lesson that could be learned across all PICs. Traditional systems such as this help strengthen adaptive capacity of the community in the long term even if the interval between disasters is lengthy.

However the high cost of living in Samoa has led to both a heavy reliance on remittances from overseas relatives and a high urban drift from villages to the main city of Apia. Reliance on remittances has resulted in a dependency mentality and increased financial vulnerability in the population. This prevents future planning and can therefore undermine the process of building adaptive capacity. *"People who are vulnerable are those households where no one works or rely mainly on remittances."* (ADRA). The urban drift to

Apia to allow better access to education and employment opportunities also affects people's vulnerability as it weakens the social structures (social capital) and support mechanisms available in the villages further creating vulnerability to shocks.

Furthermore, following the 2009 tsunami some NGOs were offering 'cash-for-work' which according to one government interviewee had an impact on the adaptive capacity of the community: *"When the local authorities asked for community assistance later, they requested payment. This was very unusual as previously 'community spirit' was the default way of response. This has affected the adaptation of the community."*

Church and belief systems

The Church plays a very important role in Samoan culture and social life and is actively involved in helping the community to cope in times of disaster. Many respondents indicated that churches are well organized and that very strong support systems exist through churches. They are a hub for communicating information and they have a wealth of volunteers to assist in disaster response activities. The Church considers itself fundamental to disaster response. For instance interviews made comments such as:

"The Church is the most important organization in times of disasters in Samoa" (Council of Churches, Samoa).

"Each stakeholder [group of churches] had 5-6 mini buses going out daily with volunteers and relief to assist the affected families." ..."In a disaster, both members and non-members are invited to seek refuge at each site (shelter). The sites are fortified to withstand all types of disasters and provide shelter for the entire community in times of disasters" (Church of Jesus Christ of Latter Day Saints, Samoa).

Mention was made specifically of the role of the Church of Jesus Christ of Latter Day Saints, Samoa, which had a very well organized disaster response system:

"The Christ of Latter Day Saints, Samoa (LDS) was the first to be on the ground when the tsunami hit. They were able to land helicopters and distribute food and clothing immediately, long before the Government and other responders came in to do their assessments. They opened up their church in the affected communities as places of shelter, immunisation as well as addressing psychosocial needs" (MAF-Transport)

Respondents across both government and NGOs suggested that the faith based belief systems (mainly Christianity) in Samoa have built resilience in people and serves to provide strong elements for supporting their adaptive capacity. Different elements of this were evident in the following comment:

"Faith based systems and their interventions were already entrenched in the social system so people were able to turn to these during the tsunami. This is why people were more resilient than expected; they were able to recover quickly because of these social groups" (OUM, Samoa).

Two constraints evident in this otherwise supportive system are some traditional practises that hinder disaster response. For instance one traditional practice noted by workshop participants was that during the 2009 tsunami the dead were given priority for transportation during the triage process and the injured left until the dead were removed. One participant indicated that this was "seen culturally as a way of showing respect to the dead." However it is possible that this practice may have reduced the access to care for the injured.

5.2 Resource capacity (human, financial and technical)

Limited financial, human and technical resources for disaster response were identified as a challenge in Samoa. However these limitations were more pronounced with respect to health care resources (see Chapter 5 of the full report). Inadequate quantities of appropriate emergency supplies was cited as an issue in the past and emphasises the need for attention to what supplies and tools are needed in the field during disaster response (MOH/NHS Samoa, Nurses Assoc). Also human resource challenges constrain adaptive capacity since there are not adequate healthcare personnel to respond. However, it was noted, *"multi-skilling communities to help themselves partly addressed the shortage of nurses and medical practitioners in Samoa"* (OUM, Samoa).

Because health care in Samoa is not free it was evident during the tsunami this placed constraints on the adaptive capacity of the health system by placing further burden on certain health care providers, "most people prefer to go to the central hospital where service is cheaper and provide better medical attention" (ADRA, Samoa). A representative of the NHS felt that in order to address these issues, there was a "need to develop the capacity of staff at the divisional level to treat victims and how to [determine] when it's relevant to recommend patients to the central hospital; this [will] then reduce the burden on staff at the main hospitals" (MOH/NHS Samoa).

Financial capacity and the organisation and distribution of funds was also noted as a weakness of the DRS. Disaster response in Samoa is funded mainly by the fiscal budget through an emergency fund (referred to by interviewees as Unforeseen Events Fund) that facilitates the immediate provision of emergency supplies after a disaster. There are also clear arrangements with the private sector for the delivery of emergency supplies after a disaster (Min Finance). Respective agencies can directly approach donors for financial assistance; however, all funds are managed through the Aid Coordination Unit of the Ministry of Finance (NDMO).

"All proposals arising out of unforeseen events (floods, tsunamis etc) are addressed through this fund (unforeseen events fund), and it is a very transparent process with high level accountability" (MWTI)

The Aid Coordination Unit has put into place accounting systems to ensure transparency and accountability as a result of past negative experiences where the government was accused of misappropriation of relief funds.

The interview process also revealed further financial support is provided by the private sector and civil society, as noted by the Ministry of Finance, "the private sector and community groups raised over \$14million for post-tsunami rehabilitation."

However, the organisation and distribution of these funds was not efficient, the Council of Churches noted that help did not reach many in need during the initial phases post disaster.

“This was very disappointing because people believed that God had showered blessings on the country in the magnitude of aid that was supplied” (Council of Churches).

This breakdown in organisation and distribution of funding has been recognised by the DRS and the: “Ministry of Finance is developing a Climate Change Framework for Samoa and will look at how to better channel donor funding. We [Red Cross] can pool funding from other programmes and that is part of our flexible structure” (Red Cross).

A lack of technical capacity for immediate response, and weak relationships between responders, was also highlighted by many interviewees. The Fire and Emergency Services (FES) provided emergency paramedics but lack adequate numbers of ambulances, whilst NHS provided ambulances but lack paramedical staff. However, there was some indication of *“a lack of cohesion between these two services.”*

A final capacity issue was the lack of trained professionals to deal with psychosocial needs, which was identified by nearly all respondents in Samoa. The need was considered great, since there was little to no in-country capacity aside from the church to deal address this issue.

Lack of resources constrains adaptive capacity of Samoa. During a disaster the human resources are stretched, particularly within the health care system; financial organisation and distribution may not reach those most in need; and technical expertise and cohesion between responders is lacking.

5.3 Leadership and management

Following the 2009 tsunami many lessons learned and are currently being integrated into disaster plans and structures. Strengths in leadership and management that were highlighted by interviewees and during the workshop included: good representation of all stakeholders on the DAC, inter-sectorial collaboration and community participation, and a well organised NDMO. Weaknesses that were highlighted were: financial management, under resourced NDMO, and coordination of NGOs.

Government and civil society organisations are well represented on the DAC, and most organisations, including civil society are involved in disaster planning:

“During a disaster, the normal procedures are suspended and a National Advisory Board comes in to deal with all immediate relief donations and to help transition into the recovery phase. A recovery plan is developed in collaboration with all sectors and approved by the DAC” (Min of Finance).

The NDMO in Samoa is well organised, recognised and provides clear leadership. However, they are severely under-resourced with currently only two people on staff.

“They [NDMO] have a very good disaster management plan, but few staff. They depend highly on their very well skilled DMO manager but if this person is away then this becomes a major issue” (AusAID).

There is much evidence of inter-sectoral collaboration and community participation in the disaster response decision making process. The National Advisory Board deals with all immediate relief donations and helps transition into the recovery phase, guided by a recovery plan, which was developed in collaboration with all sectors and approved by the DAC. All villages are required to have disaster plans and response teams under the direction of the Mayor.

“Under the Disaster Management Act, each Ministry has their own Disaster and Emergency Response plan that stipulates how to respond during and after a disaster” (MWTI).

However not all respondents agreed on the smooth implementation of the response mechanism: *“There were many gaps in coordination of the response. This resulted in the Government being accused of misappropriation of funds” (Council of Churches).*

An Aid Coordination Unit has been set up in the Ministry of Finance through which all DRR and climate change funds are channelled and managed centrally to avoid duplication. There is a national committee which includes most project coordinators (donors) and lead agencies and is supported by the Samoan Climate Change Policy. However this is not supported by legislation.

“There is only a national climate change policy in Samoa but it does not mandate anyone to do anything. There is no implementation to support the policy. The government is currently looking into climate change legislation” (Red Cross).

Evaluation of past response has resulted in the identification of gaps in the DRS, which were used as lessons learned across sectors, and has resulted in strong partnerships across government and non-government sectors. For instance: *“Coordination of NGOs is still a problem. One strategy/recommendation is to place the information on what procedure NGOs should follow on each Ministry’s website. This includes contact details for whom to contact in each department if interested in providing aid to a disaster affected country” (Min of Finance).*

Disaster assessments historically were done by each sector individually due to lack of policies to coordinate multi-stakeholder response. Various lessons were learned post-tsunami which led to the revision of the national disaster plan and disaster response arrangements. According to interviewees disaster response now utilizes a multi-stakeholder approach coordinated by the NDMO.

Coordination of disaster response is reliant on a combination of communications and existing relationships. However respondents suggested there were some areas that needed strengthening. These include: (i) strengthen lines and channels of communication and risk communication; (ii) strengthen partnerships in terms of commitment and team work; (iii) clearly identify roles and responsibilities of each organisation, and (iv) communication of procedures to NGOs through better explanation of the Disaster Management Plan and clear identification of NGO roles during disaster and emergency

and facilitate ongoing awareness of these roles. *“The main problem now is boosting our communication capacity” (FES).*

The adaptive capacity of Samoa is evidenced by participants in this research noting that Samoan stakeholders in disaster response are continuing to work towards a more coordinated DRS by integrated lessons learned from the tsunami in terms of the management of funds, coordination of NGOs, inter sectorial and intergovernmental communication and relationships and the formalisation through legislation.

5.4 Tools, methods and approaches

The adaptive capacity of the DRS in Samoa is enhanced through a concentration on preparation through training, drills, early warning systems, capacity building, and prepositioning of emergency supplies. This is coordinated through a whole of government/ a whole of country approach to address all hazards, and includes risk management and recovery.

Simulation exercises, training and drills are conducted at the village level and coordinated by the Village Teams in collaboration with the Red Cross. The NDMO and the Red Cross undertake drills to prepare all DAC members and their organisations for future events. The advantage of this was seen because, for example, simulation exercises were conducted about three weeks before the tsunami struck so people were well prepared to respond, and several aftershocks were used as drills.

“We are fostering self-reliant communities because they are the first responders. This is done through training and drills, coordinated by the Village Teams and monitored by the Red Cross” (NDMO, Samoa).

The country is also looking at improving early warning systems including training in some sectors. *“Climate services [within the Ministry of Natural Resources and Environment] provide early warning for climate issues and cater to the needs of all sectors” (NDMO, Samoa).*

Other methods utilised by the government to increase the capacity of individuals and communities to withstand both short and long term implications of climate change are the introduction of stimulus packages for Samoans who were unemployed and instead of providing money they teach skills in farming and gardening, provided seeds and training. The government as well as NGOs involved in agricultural programmes are encouraging organic farming practices, incorporating Integrated Crop Pest Management approaches.

Also, after the tsunami the government is now looking at pre-positioning of emergency supplies similar to what is done by NGOs like Red Cross, and is building a database of where these are located.

Disaster awareness programmes are being implemented by various sectors. For example, the Ministry of Agriculture provides advice for farmers through TV and radio in preparation for natural disasters on what to do before, during and after disasters and how to preserve different crops.

Several of these approaches focus on building the resilience of the population to withstand shocks and recover at a faster rate. Using lessons learned and building these lessons into methods and approaches such as training, drills, early warning systems, capacity building, and prepositioning of emergency supplies is evidence of adaptive capacity of the DRS.

6. CONCLUSION

The key determinants of adaptive capacity for Samoa that were most significant were traditional and social practices; resource capacity; leadership and management; and tools, methods and approaches.

Traditional and social practices play a major role in supporting the affected communities after a disaster. The Church and family/social structures for the most part enhance the adaptive capacity as individuals feel supported. This strength has also led to informal and formal practices of equipping the communities with rules of engagement when a disaster strikes. By including government, NGOs, the Church and the community in the decision making processes, education and training and lessons learned are more easily integrated into the DRS and sustainable practises made possible.

There is a strain on resource capacity in Samoa in particular with human resources for health, financial capacity and technical capacity. This makes the DRS more vulnerable as the HRH issues are causing the health system to be over stretched in times of disaster. Weak financial capacity is causing a reliance on remittances and is also having a detrimental impact on social practices through movement from the village to the main city of Apia. Also poor financial organisation of incoming donor funding, while currently being addressed, has caused issues in the past. During the immediate period after the tsunami a lack of technical capacity of front line responders was further exacerbated by strained relationships between organisations, causing confusion, and both duplication and gaps in response. Resource capacity would need to be improved in order to build long term adaptive capacity.

The NDMO is considered to be strong in leadership but lacks human resources. However as the tsunami was so recent there are many lessons learned being discussed and implemented throughout the disaster response organisations. Tools, methods and approaches are being incorporated across all levels of the society including the government, NGOs and civil societies. Some of these are yet to be implemented and/or realised but appear to enhance the adaptive capacity of the DRS.

Specific recommendations for Samoa include the following:

- MoH (with the support of donors and international organisations) to ensure that clear guidelines are in place for in-coming personnel to be registered to facilitate efficient and effective HRH management, immigration and customs processes in each country.
- NDMO to ensure systems are in place to facilitate a structured post-disaster debrief that encourages a feedback of lessons learned from all agencies into national policy and planning processes.
- Communication and coordination between the MoH and other DRS organisations needs to be strengthened with a view to improve effectiveness and efficiency of disaster response.
- NDMOs to work towards improved coordination of capacity building of technical upskilling and training programmes (aligned with UNOCHA's own

recommendations). This is to include needs based content and systematic selection of participants.

- MoH to lead (supported by of Australian and regional / international organisations) an urgent comprehensive assessment, including further research, of psychosocial support needs and technical capacity in each of the case study PICs, both in terms of affected populations, health providers and other first respondents to disasters.
- MoH/National Health Services (supported by Australian and regional / international organisations including WHO) to develop a strategic plan addressing emergent findings from assessments of psychosocial support capacity. This will ensure that adequate consideration and provisions are made regarding the specific psychosocial needs of the affected population, health worker support and disaster response personnel.
- MoH should ensure that adequate considerations are given to HRH needs for disaster response under a changing climate, in any new or revised National Health Plans or HRH strategic policies.
- DRS to seek the support of development partners for the assessment of how the health workforce capacity can be improved in terms of numbers, skills and competencies in the context of more frequent intense disasters.



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