Chapter 24
Coupling Disaster and Financial Management to Reduce Vulnerability: Challenging the Traditional Samoan Mindset, Experiences from the Community

Su'a Julia Wallwork

Introduction

The Intergovernmental Panel on Climate Change (IPCC) has defined climate change as the "adjustment in natural or human system in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities" (IPPC 2007).

The increasing frequency of natural hazards due to climate change poses more vulnerability to less equipped countries (Downing 1991). Pacific Island Communities (PICs) are less equipped due to their small size and location. As smaller economies and less developed nations, the region as a whole is more vulnerable than other parts of the globe. Vulnerability, or the "state of susceptibility to harm from exposure to stresses associated with the environmental and social changes and from the absence of capacity to adapt," (Adger 2006).

This paper attempts to reconstruct the last 30 years of experience of ADRA in front-line disaster and how it has adapted these to deal with climate change responses from both the human, cultural and natural perspectives. The paper presents ADRA's ongoing challenges and then aims to draw out some lessons learned from Samoa's rich experiences in preparing to adapt to climate change. If we are to build resilience for climate change in the Pacific it is going to need to be done from the lens of Pacific Islanders; this paper is an attempt to share the experience of ADRA in taking up this challenge in Samoa.

Pacific approaches research should aim to be responsive to changing Pacific contexts and therefore should be underpinned by Pacific cultural values and beliefs (HRC 2005). The primary and secondary research for this article was conducted in

S.J. Wallwork (✉)
Adventist Development and Relief Agency, Apia, Samoa
e-mail: sjwalwork@adra.org.ws

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ADRA's main office, the villages and communities of Samoa. Mindful of the need to conduct research in a culturally responsible manner, this paper is based on a long series of conversations, focus group discussions and interviews with ADRA staff, Government officials, chiefs and local community members. Although the interviews and conversations were not conducted in a systematic academic manner, they are nevertheless the outputs of many hundreds of hours or conversations and many years of implementation of social and natural resource programs at the frontlines of climate change and disasters from the communities of Samoa over the last 30 years.

Samoa and Its Traditions

Samoa lies in the southwest Pacific within an exclusive economic zone of 120,000 km^2. It has a population of 200,000 that sprawls across a landmass of only 200 km^2. Samoa relies significantly on its location in the middle of the Pacific Ocean for its food, transport and the majority of its economy. Moreover, its limited size, proneness to natural hazards and external shocks enhance the vulnerability of islands to climate change (Mimura et al. 2007). According to the World Bank, Samoa is ranked 30th of countries most exposed to three or more hazards. Samoa ranked 51st out of 179 countries in the Global Climate Risk Index 2012 report on countries that suffer most from extreme weather events (WB 2013). Samoa ranked 51 out of 179 countries in the Global Climate Risk Index 2012 report on countries that suffer most from extreme weather events (WB 2013).

Samoans rely heavily on their culture, traditions and indigenous knowledge to guide their journey of life through the traditions of their forefathers. Rarely do they look for a scientific explanation for anything. Samoans have their unique seasonal calendar and look to the moon and the sun, and the stars for the weather forecast. The Samoan seasonal calendar is predominantly based on the observations of local environmental changes, which are in turn influenced by weather and climate. Monitoring changes in plants and animal behaviour, for example, are key indicators used by the Samoans to forecast changes in weather and climate (Lefale 2009).

We turn our faces to the wind to know what kind of threatening storm is approaching. We look to the plants and animals for signs. When a certain bird the "Atafa" is sighted, we prepare for a storm. When the "Mosooi" tree blossoms its fragrant flowers used for weaving '*leis*' (garlands of flowers usually worn around the neck) that signals certain seashells are ready to be harvested. When cockroaches fly at night, we know that it will rain in the morning. When sea levels rise, we always knew that it was just a temporary positioning of the moon that will quickly readjust.

While not directly linked to climate change, the earthquake and Tsunami of 2009 was a major wake-up call for Samoa. This "Wave of Fire" (as it later became known) was the greatest natural disaster loss of life and devastation experienced, with 189 deaths. This incident all of a sudden questioned our elders and traditions; Samoans were at a loss to understand. The event caused us to rethink our relationship with the sea, for a long time afterwards the fish were untouchable because

Samoans believed the sea was tainted with the blood of their loved ones. The question that resonated with all Samoans was how could our primary source of life bring us such death and devastation?

Samoa is a deeply religious nation in which citizens believe their country and the world are in the hands of the Creator. The majority of households perceive natural disasters, the rising sea, the increasing intensity of the storms, and flooding as some punishment from God for the sins of our nation and its leaders. They do not consider the need to adapt to changes in the climate, nor do they see any causes for change. If climate change is God's will, then so be it.

So, *Will all this talk of climate change impact the mindset of the old man rolling the strand of the dried coconut husk on his knee (to make the sinnet rope to strengthen the beams of his 'fale'), as he looks out to the ocean*?

Traditional knowledge, values, beliefs and ancestral practices underpin the ability of the Samoan communities to live successfully in their environment (Flores-Palacio 2015). The 2009 Tsunami and recent storms have begun to bring our people slowly to terms with the realization that climate change is happening, and that these events are a very real scientific phenomenon.

Climate Change in Samoa

Temperatures have increased by 0.22 C per decade since 1950; sea level has risen by about 4 mm per year, and Ocean acidification has been slowly increasing since the 18th Century. Samoas climate is also strongly influenced by its proximity to the Pacific Ocean and the strength of the South Pacific Convergence Zone that undulates with the more common El Nino and La Nina oscillations.

Projections of future climate-related risk indicate long-term systematic changes will continue across Samoa. Estimates include an increase in sea level, higher occurrences of high-intensity rainfall events, increased average temperature, rising sea levels and less frequent but more intense tropical cyclones (IPCC 2007) all of which are increasing in intensity.

Vulnerability, or the "state of susceptibility to harm from exposure, to stresses associated with the environmental and social changes, and from the absence of capacity to adapt," (Adger 2006) offers a key lens to understanding the impacts of climate change on any given region. Samoa is vulnerable from a variety of perspectives. Coastal villages remain high-risk communities for climate change effects. As a semi-subsistence society with 70% of the population and infrastructure located in low-lying coastal areas, the impacts of sea-level rise, increasingly tense storms, changing rainfall patterns and impacts on ecosystems will pose considerable risks to community livelihoods and Samoa's sustainable development. Under the Samoan Coastal Infrastructure Management Strategy, some 68% of Samoa's national coastline of 578 km was found to be either extremely vulnerable or vulnerable to coastal erosion (Fakhruddin et al. 2015).

Projected sea level is expected to exacerbate coastal erosion, loss of land and property, and dislocation of island settlements. Coastal floods are also likely to become more frequent and severe. High winds, storm surges, and heavy rains cause serious damage to agricultural plantations, infrastructure, and the country's socio-economic base (UPRS 2015). Changes in tropical cyclone systems increase the risk to life, property, and ecosystems. With 70% of the population and infrastructure in low-lying coastal areas, climate change cuts at the country's lifelines, water, food and its natural resources.

Samoa's heavy reliance on agriculture, both extensive and intensive, makes it sensitive. Crops can be destroyed or damaged by extreme climate conditions such as drought, prolonged rainfall as well as isolated extreme events like cyclones and tropical storms. The hardship to farmers and households is immeasurable given their heavy reliance on agriculture, both as a source of food supply, as well as a source of income.

Water is vital not only for hydropower generation but also basic needs of communities and agricultural development. Water, however, is heavily dependent on rainfall and land-use practices. Increased rainfall run-off will accelerate soil erosion and sedimentation in existing water supplies (Chase and Veitayaki 1992). Tropical cyclones and storm surge also affect water supplies by damaging water supply infrastructure while sea level rise increases intrusion of salt water into fresh water supplies.

Climate change includes increased burden of waterborne, foodborne and vectorborne diseases; traumatic injuries and deaths from extreme weather events; increased burden of respiratory illnesses; compromised food security; and heat-related illnesses (Flores-Palacios 2015). It is widely agreed in the literature and from our experiences that human survival, in the face of impacts of climate change, is dependent on mitigation and adaptation strategies (Costello et al. 2009).

Recent Natural Disasters and Their Impacts on Samoa

The 2009 Tsunami displaced hundreds of households from their traditional villages. The tsunami of 2009 not only claimed lives, but it left communities forced to relocate inland. The ocean which had traditionally been a source of life for Samoans had suddenly become untouchable because it had taken the lives of loved ones. Villages which were housed by the Ocean now shunned it.

According to the Samoan Post-Disaster National Assessment, "The total estimated damage and loss on Cyclone Evan which hit Samoa in December 2012 were equivalent to about 28% of the total value of goods and services produced in the country in 2011". The value of durable physical assets across all economic and social sectors destroyed by Evan (referred to as damage) is estimated at USD 103.3 million. A significant amount, given the relatively small size of Samoa's economy, almost 28% of the total value of goods and services produced in the country in 2011.

Adaptation Programs in Samoa and the Role of the Government

In 2005, Samoa prepared a National Adaptation Programme of Action (NAPA)—a document which prioritises Samoa's climate-related projects. The NAPA aims to communicate urgent and immediate adaptation needs and activities; it also implements projects which will mitigate and reduce the economic and social costs of climate change. More specifically, the NAPA provides a process by which Least Developed Countries such as Samoa can prioritise their vulnerabilities, formulate strategies and activities to build resilience.

The NAPA project builds on the national development goals, strategies and action plans implemented by the Government of Samoa. The 2005–2007 Strategy for the Development of Samoa (SDS) with its theme of 'enhancing people's choices' had six priority strategic areas that guided Samoa's development for the next 3 years continuing from past SDS periods. These include private sector development, agricultural development, tourism, community, education, and health development. The four National Environmental Management Strategies (NEMS), including the national waste management policy, national land use policy, the water resource policy and the national policy on population and sustainable development, have a common interest in promoting sustainable development (NAPA 2016).

What is notable about the NAPA is its focus on adopting an integrated approach where relevant stakeholders can work hand in hand to ensure that those whose livelihoods are most vulnerable to climate change. It also places significant emphasis on projects being country-driven, local and community-based.

The NAPA has provided a strong framework for the implementation of climate change adaptation projects in Samoa. While the majority of these focus on forestry and agriculture, there has recently been a greater focus on coastal zone management, human health, food security, infrastructure, water and policy and planning. Most, if not all, of these projects place considerable emphasis on community participation.

In implementing the PACAM project, ADRA has begun to incorporate the same community-based integrated approach to implementation that NAPA emanates. Working in collaboration with government ministries, local village authorities, and other disaster agencies, the ultimate objective of ADRA is to enhance livelihoods and improve disaster risk management at the community level. More importantly, ADRA attempts to build understanding between implementing agencies and communities regarding climate change, and what it means to those truly affected by the changes afoot.

The ADRA/PACAM Project—Community Disaster Management and Livelihood

The ADRA mandate is to alleviate suffering and reduce poverty. Throughout the world, this continues to be the focus for ADRA with its main motto being —"Changing the World, One Life at a Time". In our little spot on the world map, we cannot effect any significant change in the world. We are simply not big enough. We can, however, "Make a difference, one life at a time". The 'Development' and the *'Relief'* in our name are the essences around which we align our community development and adaptation work.

Recognising the traditional mindset and adapting our projects to encompass these beliefs while also steering communities and traditions to grasp this unfortunate new reality of unpredictability is ADRA's vision. Our approach needs to bridge traditional values, religion, and current realities and answer the question on how to prepare our families and communities to be resilient given the changes that lay ahead.

The project holds its roots in the Samoan earthquake and tsunami experience of 2009. The tsunami highlighted the incapacity and lack of preparedness of local communities to cope with such events. Villages were isolated and cut-off for extended periods of time with little access to basic needs. Equipping such communities with the skills not only to prepare for a natural disaster but also to manage the long-term effects of these disasters is vital, if not life-saving.

In recent years, ADRA Samoa has implemented projects that have focussed on sustainable economic development, with emphasis on developing good nutrition, to help reduce the non-communicable diseases rife in Samoa. In our experiences, we have found success is most likely when we focus on strengthening the core economic status of the community. Once we have momentum for socio-economic development, we can focus on other activities like planning and disaster preparation and planning.

ADRA's project, therefore, follows two core and parallel approaches. Firstly, it seeks to develop disaster risk management and preparedness activities among village communities. Secondly, it aims to increase and diversify livelihoods through improving the financial marketing literacy of low-income households.

ADRA was careful in identifying those villages which had not previously had any adaptation project. Following the 2009 tsunami, extensive rehabilitation and adaptive programs have already been conducted in many of these coastal villages. It was still difficult to prioritise which communities to focus efforts given the majority of village communities are located in coastal areas.

The success of previous projects indicated that the support of traditional village councils implementing adaptation projects was pivotal to the success of any community-based project. The Council plays a vital role in ensuring the security of catchment areas by having members of families responsible for their catchment areas. The project activities are supported by the Council of Matai (Chiefs), and women's and youth groups in each of the ADRA villages. Embraced by a culture

founded on love and respect, the authority of the Council of Chiefs is well recognised and adhered to.

Building on this experience, ADRA chose to work only in villages which still followed the traditional hierarchy (Chief) system, who are in a stronger position to implement their Community Action Plans. After a rapid appraisal of suitable sites, the project was able to identify six villages on the island of Savaii, which had not previously benefitted from any climate adaptation program. These are namely the villages of Sagone, Siufaga, Vailoa Palauli, Falelima, Satufia, and Samata. The populations of these communities range between 289 to almost 800 individuals with the smallest village consisting of only forty (40) households. ADRA believes success will only be achieved with a two forked approach to its work, developing communities to be prepared (community plans) while at the same time enhancing socio-economic community resilience, both are shared below.

Developing Community Action Plan and Village Disaster and Climate Risk Management Plans (VDCRM)

This program aims to bolster households and communities disaster preparedness. Improved resilience should provide the communities with the edge to better withstand climate-related economic, social and natural shocks.

One of the lessons learned from the 2009 tsunami was that in the hours following a disaster, search and rescue, provision of immediate assistance to injured and homeless, is almost entirely carried out by family members, relatives, and neighbours. Communities were unprepared, due to an ineffective warning system and no prior planning. Escape routes in villages that were surrounded by steep cliffs were close to impossible. The extent of this tragedy underlined the need for greater community understanding of natural disaster events and community-level preparedness and planning. Top-down disaster risk reduction programmes and responses failed to address the specific vulnerabilities, needs and demands of at-risk communities. Engaging communities in direct consultation and dialogue is essential from the beginning of any program.

To prepare communities for disasters, ADRA delivered a Disaster Preparedness and Climate Risk Management Training Toolkit. The toolkit walks households through a process of understanding, planning and ultimately improving their adaptive capacity to disasters and long-term changes due to climate change. By enabling villages to identify their vulnerabilities, they are better able to understand them and identify locally suitable ways to respond to mitigate these risks using the resources available to them. More importantly, communities are organized and trained to respond themselves in times of disaster.

The training focuses on Disaster Risk Management (DRM), facilitation techniques, participatory approaches and project management. The toolkit includes a series of training modules focusing on such areas as situation analysis, prioritising

and action planning, DRM structure and planning, training/resourcing response teams and simulation exercises and drills. From these training modules, villages formulate their Community Action Plans that lay out what needs to be done before, during and post episodal and long-term changes due to climate change.

All Village action plans, community action, and disaster management plans are compiled into the Village Community Disaster Reduction Management (VCDRM) Plan, overseen by the village elders. This plan is then reproduced and shared with partners, government ministries, and other initial first response agencies and shared into the national database.

Enhancing Livelihoods and Improved Financial and Marketing Literacy of the More Vulnerable Lower Income Households

From the six villages, we have engaged over 600 households with a target of both diversifying and increasing incomes for all households by 20%. We also support an education program for households to equip them with the necessary financial and management skills to maintain and sustain their income-generating activities. An underlying element of this work is the financial literacy training in partnership with the Bank of the South Pacific and the Central Bank of Samoa. After the training, villagers can record incomes and savings in ledger books before depositing in a bank account.

Diversification not only reduces sensitivity to the effects of climate stressors but more importantly it has the added co-benefit of generating income for village communities. The introduction of vegetable crops that are less susceptible to adverse weather conditions is vital (local varieties of root crops) as is having a diverse food basket that does not rely on just one or two crops. Diverse Livelihoods take an integrated approach and include the establishment of all aspects of livelihood with fish catchment areas, vegetable, herb, and seaweed farming being part of a well-balanced livelihood. ADRA is also providing market information for each village and their products and identifying possible market opportunities.

There are considerable benefits to this form of participative approach. Engaging village communities in these projects empowers them to take responsibility for the success of each activity. It not only results in Village Plans which are reflective of each village's unique situation but just as importantly, it allows communities to participate actively in undertaking activities. During the hands-on activities community members have recently begun to notice the small and sometimes subtle changes due to climate change, and have begun discussing the changes and implications on their livelihoods in the long run.

Discussion

Unfortunately, the traditional Samoan mindset, steeped in religious faith and traditional knowledge, perceives climate change differently from the 'gloom and doom' theme that seems to surround the phenomenon of climate change today. Our people have little fear of climate change. A lack of scientific knowledge coupled with the incremental way in which climate change takes place may be behind this lack of awareness.

Despite sporadic cyclones and extreme environmental effects, the majority of Samoans fail to see any major changes, and for that matter lack concern over future projections of climate change. The majority of Samoans do not directly correlate changes to the environment with climate change yet, nor do they perceive it as a future threat. They feel the sunshine is getting warmer, but they have no understanding that it is because of increasing global temperatures or the melting of the poles.

An ongoing challenge for ADRA is how to encourage and change the Knowledge, Attitudes and ultimately behaviours. Samoa's geographical isolation has not helped; rural communities are cut off from global events and most media channels.

The strong leadership of the National Government that laid out the NAPA provides an excellent framework around which to implement and align between civil society and national Government. By integrating the concepts of *faamatai (the way of the Chiefs)* and *faasamoa (the Samoan way)* into this project, ADRA can tap into the traditional model of a community decision making by consensus under the leadership of the village *matai* (chiefs). We are finding that when we have strong buy-in from traditional leaders, we are achieving success in our work.

Another opportunity we are exploring through our work is how to bridge the young and the older generations, their knowledge, and traditions. ADRA makes every effort to work respectfully with village elders to ensure the passing of information down and working with the younger generation (has access to social media and other mediums of communication to share up).

We are working with villagers to learn more about ocean tides, migration patterns and breeding patterns of fish. Many fishers already possess traditional knowledge of fish patterns, passed down through generations of fishing families. With the changes in climate and migratory patterns, ADRA hopes that combining this technical knowledge with traditional practices will better equip fish farmers to manage their fish catchment areas sustainably.

We are learning that unless the project is "holistic" and "integrated" (i.e., focus on needs (social, economic and ecological) they will not be truly successful. As part of the integrated approach, we engage communities in economic development activities. Improved economic status is part and parcel of a more resilient community. To highlight this, we are now working with communities on showcasing new commercial products. We initially began with Chillies for the highly demanded Samoan Chilli Sauce. Since introducing these small farms, we have now introduced

Turmeric, sweet potato, cassava, and yams to diversify local crops and build more options for community harvest. We are also finding that seaweed farming for Carrageenan does hold potential as an income provider and nutritious food security crop. Current harvest techniques can be improved, as can access to markets.

As these small wins continue, we are finding communities are beginning to open up to other changes and discussions around the impacts of climate change. Most certainly, the path ahead is not without challenges. Foremost is the need to try and bring about change to mindsets so that a better understanding and appreciation of impacts from climate change can be developed.

Core to that we need to understand people's perceptions about the changes occurring in the land and seas of Samoa and using this project and other work to identify the best opportunities to align likely climate changes with a future adaptation of all sectors of Samoan society.

Although this paper describes the work in progress, ADRA is finding that its role is that of a Bridge. A bridge between science and local knowledge, between young and old and traditions. The biggest challenge we face is how to turn a future plagued with problems, to one that allows Samoans to see the opportunities and minimize the risks that will come with climate change.

Conclusions and Prospects—Applying the Learning

- Programs and implementation with communities are most effective when they address an integrated approach with social, cultural, economic and ecological objectives and outputs.
- Looking for opportunities to integrate science into the overall narrative of Samoan society, ongoing change is important if we are to encompass the positive and negative implications of climate change. How to enhance the Samoan "seasonal natural calendar" with some climate change science is an important endeavour we are looking into (i.e., identifying changes that animals make that may provide early warning systems, or at least identifying the key months when threats are greatest).
- ADRA has been working with these communities such that it has developed enough trust to become a very powerful messenger to bring the scientific realities of climate change and begin to bridge the conversations and knowledge that need integration into our traditional oral culture.
- Introducing livelihood options to communities and addressing the socio-economic desires of communities first is a solid gateway to starting to build resilience and the overall concepts behind climate change. Diversifying incomes and preparing for emergencies is important. ADRA is preparing itself for these challenges.

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