



# DOES GENDER RESPONSIVE DISASTER RISK REDUCTION MAKE A DIFFERENCE?

*A comparative study of  
Category Five Tropical Cyclone Pam in Vanuatu*



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gave their time and shared their insights and personal stories, which were at times emotional. The opportunity to visit these communities allowed the field team to better understand their experiences of TC Pam and, through this, to demonstrate the value of providing ongoing DRR support before disaster strikes. The study hopes to contribute to the knowledge base about the benefits of gender responsive DRR, and to strengthen calls for more and continued DRR funding. The DRR programs studied were implemented by CARE International in Vanuatu and supported by the European Union through the European Commission's Humanitarian Aid and Civil Protection Department (ECHO) through the Yumi Redi project (from 2011-2016), and the Australian Government and the Australian public through the Australian NGO Cooperation Program (ANCP) funded Yumi Strong project (2011-2016). The Yumi Redi project is implemented by a consortium of agencies, including Save the Children, Oxfam, and the French Red Cross. The study has been funded by the Australian Government through the Humanitarian Partnership Agreement (HPA).

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## List of abbreviations

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ACS	Area Council Secretary
ANCP	Australian NGO Cooperation Program
AS	Area Secretary
CDC	Community Disaster Committee (noting that after 2013 they were called CDCCCs)
CDCCC	Community Disaster and Climate Change Committee
CRP	Community Response Plan
DRR	Disaster Risk Reduction
ECHO	European Commission's Humanitarian Aid and Civil Protection Department
EOC	Emergency Operations Centre
FGD	Focus Group Discussion
HPA	Humanitarian Partnership Agreement
INGO	International NGO
MEAL	Monitoring, Evaluation, Accountability, and Learning
NDMO	National Disaster Management Office
NGO	Non-Governmental Organisation
OCHA	United Nations Office for the Coordination of Humanitarian Affairs
PDCCC	Provincial Disaster and Climate Change Committee
PDO	Provincial Disaster Officer
SDCCC	School Disaster and Climate Change Committee
SSI	Semi-Structured Interviews
TC	Tropical Cyclone
TPG	Tafea Provincial Government
UN	United Nations
USD	United States Dollars
VHT	Vanuatu Humanitarian Team

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# EXECUTIVE SUMMARY

*Vanuatu is made up of 83 islands scattered across 1200 square kilometres of Pacific Ocean, leaving remote populations isolated and making access and service delivery difficult. Vanuatu is well established as one of the most disaster prone countries in the world, with cyclones, volcanoes, earthquakes, tsunamis, droughts, and floods among the hazards faced (UNU 2015). On 13 March 2015, Category Five Tropical Cyclone Pam (TC Pam), one of the worst cyclones to hit the Pacific region, struck Vanuatu and other Pacific Islands. TC Pam brought very destructive winds, storm surges, and flooding across huge areas of Vanuatu, destroying homes, schools, health facilities, crops, and livestock and affecting approximately 188,000 people, or 70% of the population (Government of Vanuatu 2015a).*

Prior to TC Pam, CARE International in Vanuatu was working to increase the resilience of communities and schools that were at risk of the impact of natural disasters and climate change. CARE's work included setting up and training Community Disaster and Climate Change Committees (CDCCCs), working to ensure equal female membership of the CDCCCs, providing gender and leadership training, facilitating emergency simulations, providing emergency equipment, and giving training in the use and maintenance of the emergency equipment. Gender and social inclusion were integrated throughout the activities, and attention was given to women's leadership and participation in community decision making. Efforts to strengthen the provincial and national disaster management systems were also central elements of CARE's work, including Tafea Provincial Government planning and training, and facilitating a multi-hazard simulation exercise linked to the national and community level. Ongoing capacity support at provincial and national levels, and support for the development of standardised systems and forms, were also part of CARE's work, together with other Yumi Redi consortia partners (Save the Children, Oxfam and French Red Cross).

Anecdotal and qualitative evidence gathered by CARE and others after TC Pam (e.g. Barber 2015, CARE International in Vanuatu 2015a, CARE International in Vanuatu 2015b, Whitfield 2015b) suggested that CARE's programming across islands in Tafea Province had a significant and positive impact on communities. This external study was commissioned to obtain more robust evidence of the impact of CARE's mid to long term gender responsive DRR

interventions in the event of a major natural disaster.

This comparative study used participatory methods to draw out analytical insights from the communities to understand the nature of their actions in response to extensive early warnings of the cyclone, the damage and loss experienced, and their recovery. The field team gathered data from nine communities (three communities in each of the three islands of Aniwa, Erromango, and Tanna) and compared the results. The communities on Erromango and Aniwa Islands had participated in CARE's extensive gender responsive DRR programming before TC Pam. The communities visited on Tanna Island had not participated in this DRR programming before TC Pam, and had not had similar support from any other agency in the years before TC Pam.

At the outset, it is important to recognise that the three islands have quite different cultural and geographical contexts: Aniwa is a small coral island that rises just 42 metres above sea level, Erromango is a large mountainous island with the population scattered mainly around the coast, and the communities visited in Tanna are located around the base of Mount Yasur, an active volcano in the north east of the highly populated island. There are also social and cultural differences between the communities, different language groups, and different religious groups. The study was designed to ensure these were taken into account and the findings have been presented with these differences in mind.

## *Tools used to gather and analyse data on community actions, damage, and early recovery*

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Data was gathered from a set of community level participatory exercises, secondary sources, and further interviews to understand community actions, damage, recovery, and gender and social inclusion aspects. To analyse community actions, a standardised DRR Checklist was developed, based on the NDMO's Community Response Plan (CRP) that CARE had used with communities in Aniwa and Erromango. The CRPs specified the actions to be taken (by the whole community, the CDCCC, women, men, and youth) at each of the five stages of a cyclone event (24hrs before – known as blue alert, 12hrs before – known as yellow alert, during – known as red alert, within 24 hours of the event, and initial community recovery). The different preparedness and early response steps that a community actually took (or did not take) were recorded and compared to the recommended steps as per the checklist. Analysing and consolidating the results of the participatory exercises into the checklist resulted in a percentage score for each group, at each stage of the event, and a total percentage per community and per island.

Exploring the damage experienced at the community level and the impact of DRR on damage prevention was also part of the study. There were two key factors that affected this analysis: the complex local variables that influence damage, and a lack of local data in some communities. Local and event specific variables complicated the validity of direct comparison of the damage experienced, and the cyclone track meant the islands experienced different wind speed and direction, storm surge, and specific time of landfall. Coastal ecology, coastal embankments, and geography also influence cyclone damage. The specific locations of the houses and

the structural integrity of the houses also influence damage, and combining all these factors was not possible in the scope of this study. Despite this, the study did explore and seek to understand the differences between communities in terms of the damage and loss experienced.

Communities in Aniwa and Erromango collected gender disaggregated damage and loss data in the hours and days immediately after TC Pam, which gave a clear picture of damage experienced. The communities in Tanna (which had not had support from CARE before TC Pam) did not collect such data, and it was also not found from other sources. This meant the field team had to develop estimates based on observation and community memory, which limited the level of detail and its potential accuracy. As a result of data analysis, a data set was created that showed the proportion of houses that experienced serious or total damage in each of the communities, expressed as a percentage. Review of assessment forms and the participatory field work also gave data on other forms of damage and loss.

As part of the participatory exercises, the team also gathered community perspectives on their recovery so far, 15 months after TC Pam. The team used a visual representation of a cycle of recovery that showed the event and progress around the cycle back to 'normal times'. Along with the specific actions taken to recover in the days after the cyclone, this data gave an idea of community perspectives on their progress, and stimulated a discussion about the factors still holding them back from full recovery.

## *What did the community do before, during, and after TC Pam?*

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Early warnings about the cyclone were being issued by the NDMO from 11 March. The early warnings issued by the NDMO were heard across the three islands, either directly or via family and friends, however community action that was taken differed significantly between the communities CARE had been working with and those that it hadn't.

The communities CARE had worked with understood and took the alerts seriously, and acted early to prepare houses and the community in a coordinated way. The data shows communities in Aniwa and Erromango achieved a score of over 70% and up to 100% in all five stages of the event, and by all groups of the community. This meant that when



the cyclone was upon them in the early hours of the morning, all but a handful of the people across all communities were in safe houses with food, water, and bedding.

In contrast, in the non-DRR communities in Tanna, they heard but did not fully understand or take the alerts seriously, and were all sleeping in their own houses, having taken no or little action, as the winds started to cause damage and were heading towards Category Five strength. The Tanna communities scored between 0% and 13% in the first four stages, and up to 40% in the early community response stage (which reflected their familiarity with recovering from disasters). Some households started to take actions, such as tying roofs and securing belongings, only as the winds were becoming strong, and families with children, elderly people, and people with disability had to move, often several times, as houses were destroyed around them and trees were falling down. In the coastal community in Tanna that was visited in the study, this also meant moving around during a storm surge, putting themselves at serious risk. While their actions in the first response stage (such as clearing roads and rebuilding homes) commenced soon after the event, they were taken household by household, and those who needed additional support, such as people with disability and the elderly, got this support from their immediate family rather than from the wider community.



## *What damage did they experience?*

As noted above, the specific wind speeds and direction that each community experienced plays an important part in the damage experienced, and Erromango and Tanna both experienced very destructive winds. The eye of TC Pam passed down the west coast of Erromango and almost directly over the communities in the study, and down the west coast of Tanna (noting that the communities visited are in the north east of Tanna). Aniwa is 24 kilometres northeast of Tanna and hence experienced a lesser force from TC Pam. In Aniwa, the proportion of houses that experienced significant damage, or were destroyed, was between just 2% and 36%. In Erromango, the proportion of houses that experienced significant damage, or were destroyed, was between 59% and 82%. In Tanna, it was between 94% and 96%.

As a result of the storm track, directly comparing damage data between Aniwa and Tanna is less valid than comparing damage data between Erromango and Tanna. Having said that, given the range of other local factors that contribute to the damage experienced at a household and community level that are noted above (such as geography, house structure and location), there remain some limitations to direct quantitative comparisons. Having said that, it is reasonable to conclude that at least some of the reduced damage to houses in Erromango can be attributed to the DRR programming and the preparatory actions taken by the community.

Looking beyond data on damage to houses to other forms of damage and loss, some other observations can be made based on the participatory exercises

undertaken with the communities. Throughout the DRR communities, there were multiple, consistent examples of where preparedness actions mitigated losses that were not evident in the non-DRR communities. Despite damages, communities in Aniwa and Erromango had places to sleep immediately after the cyclone and while rebuilding, thanks to the protected houses, or safe houses, that had been established. Coastal DRR communities protected their boats by moving them inland and weighing them down. They did not lose any boats and could recommence fishing activities immediately after the cyclone. The boats in the non-DRR community were not protected and were almost all damaged beyond repair. All three islands experienced total or near total loss of gardens and other important plants such as coconuts, but the DRR

communities had harvested and prepared food, which gave them a two week supply to survive on after the cyclone. The non-DRR communities survived on fruit that was ripe at the time and fell down in the winds, which was enough to sustain the community for only a few days. DRR communities protected the water pipes that connected roofs with water tanks. This meant they could use the uncontaminated water in the tanks and collect the very limited rain that fell in the months after TC Pam. As well as damage to houses, the loss of household items such as clothes and cooking pots are important for early recovery at the household level. In Erromango, the community reported that they secured important household items as part of their preparation and that, even when the house was destroyed or damaged, these items were saved.

## *How are they recovering now?*

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Recovery in all three locations is still in the future, but all the communities have cleared damaged trees and infrastructure, replanted crops, and rebuilt houses. However, recovery for all three islands has been held back by additional challenges that they face, and across all three islands the long dry period since TC Pam hit, driven by an El Niño phase, has slowed the regrowth of food crops and critical local materials to rebuild houses. Some of the rebuilt houses will need to be replaced sooner than normal as they have been built with green materials. In all locations, important cash crops, such as oranges (in Aniwa) and sandalwood (in all three islands), will take many years to recover.

In the Tanna communities, their proximity to the active volcano of Mount Yasur means they are experiencing frequent ash falls in addition to the long dry from El Niño. These ash falls have increased since the loss of vegetation cover in TC Pam and the increase in volcanic activity since November 2015. There is limited research into the impact of this hazard for the communities, and better understanding that this is important to develop strategies to assist communities to progress their recovery and food security.

The results of the community recovery discussion were very consistent between the communities on Aniwa and the communities on Erromango. Aniwa communities stated they are 'almost there' and Erromango communities stated they are 'half way

back'. On Tanna, people in Waisisi and Emrawang stated they were 'half way back', but in Lokaim, people stated they were not yet 'half way back' and that they were worse off than before TC Pam, which is mostly attributed to volcanic ash fall. Ash fall is an important barrier to recovery in the Tanna communities because along with ongoing crop damage, the houses they have built with green materials are being further damaged. In the Tanna communities, almost all houses were destroyed, meaning greater demand for the slow to regrow materials than in Erromango, where damage was less and resources are more plentiful due to the lower population.

The loss of household items such as clothes and cooking pots affects the capacity for early and ongoing recovery at the household level. In Aniwa and Erromango, even when a house was destroyed, the household items had been secured and were mostly saved. In the communities visited in Tanna, only a few households secured these items as the winds picked up, so most families had very limited resources with which to begin their immediate recovery. Damage to fishing boats in coastal communities also varied. All of the fishing boats were saved in Erromango by moving, securing, and weighing them down, as advised by CARE. They could start fishing again as soon as they had the time after the initial cleanup. In the coastal Tanna community visited, all the fishing boats were seriously damaged or destroyed.

## What are the gender and social inclusion aspects of these findings?

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Gender and social inclusion were embedded throughout the DRR program, and specific attention was given to women's leadership and women's participation in community decision making. Key impacts were found in decision making, women and men's cooperation, attitudes to protection of vulnerable community members, and attitudes to disaster management in general.

Women and men in the communities on Aniwa and Erromango reported that they have come to recognise that women and men have an equally important role to play in disaster preparedness, response, and recovery. Women across the three islands were more likely to report actions in the home and garden, such as preparing food, and men were more likely to report actions outside the home, such as house strengthening and tree cutting, reflecting established gender roles. In the communities visited in Tanna, limited, if any, action was taken, and some women said that they were worried about the warnings, but their concerns were ignored. Women in Aniwa and Erromango said they were now more confident in sharing their views and, across both islands, the participatory exercises revealed a range of specific roles for women and men, and recognition of the important roles of women in disasters and decision making.

In establishing the CDCCCs, CARE aimed for equal representation of women, and they provided gender and leadership training to support this. CARE's approach led to greater representation of women in community decision making, preparation, and response, and women and men played active and respected roles throughout TC Pam. In one community in Aniwa, a CDCCC is chaired by a widely respected woman who could play an active role from her centrally located home. Female and male CDCCC members worked together during the event in Aniwa and Erromango to take appropriate action. At times, this meant shifting and changing roles to ensure actions were done. For example, as the cyclone hit, almost all people in Aniwa and Erromango were in safe houses, but the communities set up stand by teams to be alert through the night and check on the cyclone's progress outside. Women CDCCC members took on roles supporting people inside the safe houses, and passed their CDCCC vests to strong men to work with CDCCC men to do these patrols.

The women and men on the CDCCCs in Aniwa and Erromango played an active and respected role in initiating and coordinating appropriate action through the stages of the event and even into the longer term recovery stages. Community coordination in the recovery stage also made things easier, despite the ongoing challenges each community faces. However, the communities that had no DRR support from CARE reported that although a one off training was delivered in 2009/2010 and a CDC<sup>1</sup> was set up then, they were not clear on their role, or how to interpret the updated cyclone warnings. When a meeting of the CDC was called as part of the participatory exercises, it was not clear to the people present who should be there, and those that were there reported playing no active role in coordinating community action.

The program took a whole of island and whole of community approach in Aniwa and Erromango that sought to ensure the most vulnerable people and groups benefited equally. This transformed both disaster management and social inclusion from a family responsibility to a community one. Community linkages were reported as stronger than before the program, and the whole of island approach helped to avoid social conflict and strengthened linkages between neighbouring communities. People with a disability, the elderly, and children were seen as a community responsibility in each Aniwa and Erromango community, and they gave evidence of specific actions taken to seek out and support vulnerable groups. Help was asked for, offered, and given across all the stages of TC Pam. For example, in a safe house in one community in Erromango, the head count revealed that several women were not there. The women were found in a nearby tin house as they were menstruating. The safe house was a nakamal, a male dominated community house, and in normal times the women would not have been allowed inside during menstruation. The chief and the CDCCC members recognised the house they were in was not safe and, before the winds were strong, they ensured the women came inside for their safety.

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<sup>1</sup> When these were set up they were Community Disaster Committees, but in 2013 the Government designated additional responsibilities to CDCs so that they are more recently referred to as Community Disaster and Climate Change Committees



## Conclusions: Can gender responsive DRR make a difference?

CARE worked with the communities in Erromango and Aniwa over a number of years, and established and tested community disaster preparation, response, and recovery capacity prior to TC Pam. Drawing on the

findings of the report, some key points can be made about the difference that such mid to long term gender responsive DRR programming has made to these communities.

### **CARE's gender responsive DRR programming contributed to reducing the impact and damage from TC Pam in the communities that had participated in DRR programming compared to the communities that had not.**

CARE's gender responsive DRR had positive impacts on community level preparation, response, and recovery. It may have also been a contributing factor to reducing some of the damage experienced by the communities who had been part of DRR programming. CARE's program led to greater coordination of community action before, during, and after the cyclone. The study clearly found that in the DRR communities, women and men worked together to prepare, respond, and recover from TC Pam in line with recommended approaches. The CDCCC, including strong women leaders, was respected, and on their instruction, almost all people moved in a coordinated manner to safe houses at least 12 hours before TC Pam hit. In contrast, in the non-DRR communities, disaster preparation, response, and recovery was seen as an individual household and family responsibility, action was not coordinated across the community, and overall very little action was taken to prepare for and respond to the cyclone. The benefit of the greater community coordination in Erromango and Aniwa extended into the relief and recovery stage. Relief distributions and community action was more coordinated in Aniwa and Erromango as they had an active CDCCC to manage the process, with women playing active roles in the relief process.

### **Gender and women's empowerment are important goals for DRR.**

One of the aims of CARE's program was to foster women's participation and decision making by facilitating women's active participation in CDCCCs. CARE's approach led to increased representation of women in community leadership roles, including as chairpersons of the CDCCC in some cases, and the gender training provided to all CDCCC members contributed to increased respect for women's leadership in disasters. While acknowledging inherent cultural differences between Aniwa, Erromango, and Tanna, the voices of

women were heard more loudly, and women's membership and leadership in CDCCCs was greater and more respected in the DRR communities than in the non-DRR communities. The greater involvement of women in disaster leadership contributed to more inclusive preparedness and response. Each DRR community provided evidence of specific actions taken to seek out and support women, children, and people with a disability in preparing, responding to, and recovering from TC Pam. In the non-DRR communities, women were less likely to speak up in the community meetings than in Aniwa or Erromango, and some reported that they were not able to participate in community decision making.

### **The whole community took responsibility for people with disability, children, and the elderly.**

The equal representation of men and women was found to bring different perspectives to the CDCCC. As a result of communities' participation in the DRR program, disaster management was transformed from a family responsibility to a whole of community one, and people with a disability, the elderly, and children were also seen as a community responsibility. A consistent message across the DRR communities was that this joint responsibility extended to looking after vulnerable community members and help was asked for, offered, and given across all the stages of TC Pam.

### **Better preparation dramatically changed community experiences of TC Pam.**

As well as the differences in the DRR checklist, communities also shared their different feelings about the event with the assessment teams. In Aniwa, for example, the communities were proud to talk about their experiences. They were keen to explain how they worked together and who took on which roles. They spoke constructively about things they could do to improve their response and were looking to the future. In Tanna, in contrast, it was clearly an emotional experience for some people to revisit their experiences of TC Pam. Over a year later, people showed that they still carried some trauma about their experiences.

### **Early warning alone is not enough: understanding of the information and a trusted source is needed.**

While the alerts about the coming cyclone were widely heard across communities that had no DRR support, they were not taken seriously or not fully understood by both women and men. Women in one non-DRR community felt concerned about TC Pam and wanted to go to the garden to harvest food in preparation, but the men were not supportive of this action and held them back. Families did not prepare and went to sleep in their own houses. As a consequence, people were put at substantial risk; one by one, families had to move from house to house as they were damaged. Being able to receive early warnings is not enough to ensure preparation: knowledge is needed to interpret and understand the different warnings and to know how to act on them. The DRR communities in Erromango and Aniwa had received training on alert phases, and community members often cited that they trusted the CDCCCs and took their advice. The CDCCCs in each location went house to house to check on people in their preparation, and in Erromango, this sometimes meant travelling to outlying settlements. Their actions meant that the early warnings were being delivered by a trusted source, and the warnings were taken seriously and acted upon.

### **Timing of preparation is critical.**

Although some households in non-DRR communities did act to tie down their houses or to prepare household items, they only did this when the wind was already strong and houses were already being damaged. There were a surprisingly low number of injuries and no deaths in the communities visited, although many families moved from house to house during the height of the cyclone until they found a safe place. This reflects the importance not only of the actions taken, but also when those actions are taken in relation to the onset of the cyclone.

## Recovery capacity exists at community level and DRR can augment this capacity.

Communities in Tanna that had had no DRR support prior to TC Pam rated less than 12% in performing their preparations, but scored up to 40% in completing their first response actions. The fact that households started to clean up and rebuild their shelters in the days immediately after the cyclone reflects their familiarity with disasters and early recovery actions in the absence of DRR activities. In the DRR communities, the benefits of DRR extended beyond the initial five stages of TC Pam to relief and recovery. Interviews with national and provincial disaster management officials reported that the access to sound data in communities with an active and coordinated CDCCC made the relief stage easier for them and more efficient. Although the CDCCCs had not been trained in relief distribution processes, they willingly took on this role, and the PDC and NDMO reported that the CDCCCs were very effective in the relief stages. Women CDCCC members were also active in relief distribution and were able to voice their ideas and suggestions about the process.

## Appropriate traditional knowledge and practices remain, but are weakened.

A consistent message from all three islands was that local style houses were stronger and more likely to withstand a cyclone. However, many were old and had not been replaced for some years, as a cyclone had not come to the area for many years and so they had become complacent. The experience of TC Pam has refocused attention on this practice across the islands, and many places have built designated, strong, local style houses already. In the communities where CARE had worked, traditional style safe houses were reinforced, and doors were added or covered in during the blue and yellow alert stages to ensure community safety.



## ***Recommendations: This study offers a strong, positive case for gender responsive DRR at the community level***

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The following recommendations are offered in the spirit of increasing the resilience of vulnerable communities to disasters. The knowledge gained hopes to highlight the benefits of gender responsive DRR, and as such, to increase the strength of calls for more and continued DRR programming.

### **Long term engagement in community based DRR linked to strengthening of provincial and national capacities works, and demands increased investment.**

The above findings are strongly in favour of increased investments – by governments, donors, and NGOs – in gender responsive DRR. The training and support from CARE was fresh in the minds of the communities in Aniwa and Erromango, and the connections with CARE were strong. Effective DRR demands ongoing support and refresher training. CARE worked with these communities over a number of years and established robust community disaster preparedness, response, and recovery capacity. Short term or one off programs are not enough. An approach that focuses on continued training, capacity building, and gender equitable membership at the community and provincial government level, combined with strong linkages and national level coordination of disaster management, offers an effective and scalable model. As the Government of Vanuatu is currently adopting a national standard for community based DRR informed by the approaches of CARE and other Yumi Redi consortia partners, there is an opportunity for this model to have a significant and sustainable impact at a national level, if adequate support is provided to the Government to implement it at scale.

### **Empower trusted leaders in communities – both men and women.**

With ongoing training and support, men and women in the community, and in particular members of CDCCCs, are empowered with knowledge and skills to interpret the warning alerts, initiate appropriate response steps, and provide leadership to the community. This results in them being trusted and respected within their communities, so that their early warnings are taken seriously and their response actions followed by the whole community. Ensuring gender balanced CDCCCs, and building and empowering women to take on disaster management leadership roles, ensures their voices are heard, and that men and women work together in the community to prepare and respond more appropriately and effectively.

### **Ensure gender equality and inclusiveness is at the centre of DRR programming.**

A focus on gender equality in DRR programming can empower women to take up new leadership roles in the community, bringing new acceptance and respect from the community about the potential and value of women leaders. Ultimately, DRR activities are more effective in the face of a disaster when both men's and women's voices and roles are respected. At a minimum, programs should include ensuring gender balance on CDCCCs, empowering women to take leadership roles within the CDCCC, providing training on gender and inclusion for all CDCCC members and community leaders, and explicitly training CDCCC members on their roles and responsibilities relating to gender and social inclusion. Further, focusing on inclusiveness in DRR ensures that the community works together to ensure everyone in the community is prepared, protected, and supported in the event of a disaster, including making the inclusion of more vulnerable people a community priority.

### **Consider applying the methodology more widely in Vanuatu, and potentially elsewhere.**

The research methodology used in this study could be applied beyond the work of CARE International in Vanuatu to delve more deeply into the impacts of such DRR work. CARE or other agencies could take this methodology, as it is, to further expand the sector's knowledge of the impact of DRR programming. It could also potentially be applied in other contexts where a localised DRR Checklist, including context specific preparedness and response measures, could be developed. The findings here could also be tested after a few years, or indeed after another cyclone, to see how their efforts compare.



## 1. INTRODUCTION

*On 13 March 2015, one of the worst cyclones in the Pacific region struck Vanuatu. Category Five Tropical Cyclone Pam (TC Pam) affected approximately 188,000 people, or 70% of the population, with the southern provinces of Shefa and Tafea Provinces the hardest hit (Government of Vanuatu 2015a). Prior to TC Pam, CARE International in Vanuatu had implemented disaster risk reduction<sup>2</sup> and gender equality programming in Tafea Province. CARE had worked with the Tafea Provincial Government across Futuna Island in Tafea Province since 2008, and across Erromango and Aniwa islands since 2013.*

Globally, investments of USD13.5 billion over 20 years have been made in disaster risk reduction to avoid deaths, injuries and damage from disasters (Kellett and Caravan 2013). However, evidence of the benefits or impacts of DRR efforts are limited. Anecdotal and qualitative evidence gathered by CARE and others after TC Pam (e.g. Barber 2015, CARE International in Vanuatu 2015a, CARE International in Vanuatu 2015b, Whitfield 2015b) suggested that CARE's programming had a significant and positive impact on the communities. This study was commissioned to obtain more robust evidence of the impact of mid to long term gender responsive DRR interventions in the event of a major natural disaster. The study<sup>3</sup> compared communities where CARE had worked prior to TC Pam (Erromango and Aniwa) with communities on another island in Tafea Province (Tanna) that had not received DRR or gender support from CARE or others in the years leading up to TC Pam.

This report presents the findings of participatory field assessments undertaken in three islands in Tafea Province in June, July, and August of 2016. The islands that were the focus of this study suffered significant damage from either very destructive winds (Erromango and Tanna) or destructive winds (Aniwa). Figure 1 shows the cyclone track of TC Pam, the wind speeds, and the location of the study communities.

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<sup>2</sup> The United Nations defines disaster risk reduction as analysing and reducing the factors that cause a disaster by implementing actions such as reducing exposure to hazards, reducing the vulnerability of people and property, improving land and environmental management, and strengthening preparedness and early warning for hazard events. (UNISDR 2016)

<sup>3</sup> Contact CARE International in Vanuatu for more information about the methodology, study plan and consultant TOR



## 2. CONTEXT FOR THE STUDY

### Tropical Cyclone Pam

TC Pam formed on March 6 2015 near the Solomon Islands and by 9am on Wednesday March 11, the Vanuatu Meteorological Service had issued its first official warning for a Severe Tropical Cyclone. At approximately 10pm local time on Friday March 13, the center of the cyclone passed just to the east of the capital city of Port Vila on Efate Island, and destructive to very destructive winds were experienced in the urban areas. At this stage,

radio and mobile phone coverage was lost. TC Pam continued south to Tafea Province, and in the early hours of Saturday morning on March 14, the centre of the storm passed along the west coast of Erromango Island and then the west coast of Tanna Island before weakening and continuing south. Winds had calmed across Tafea by 2pm on Saturday March 14 2015.

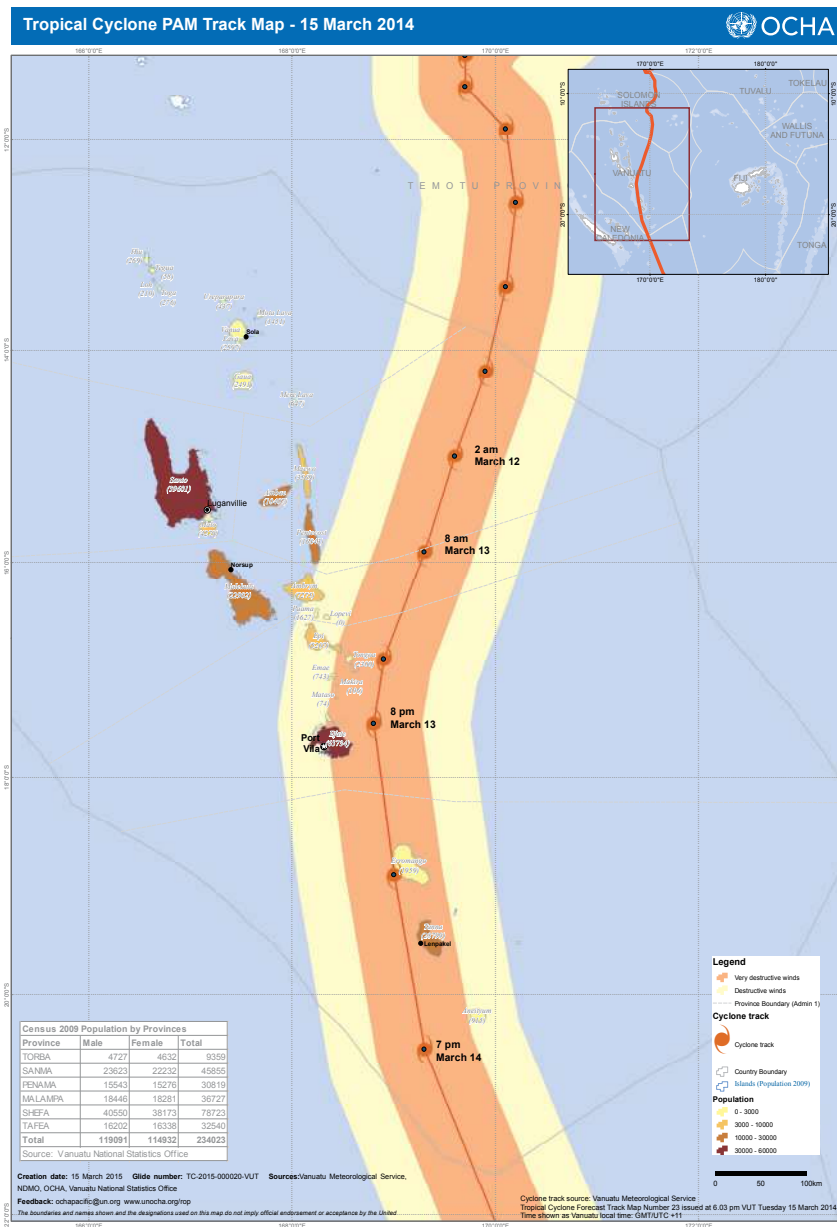


Figure 1 Map of the TC Pam track. Source United Nations OCHA

TC Pam brought estimated wind speeds of 250 kilometres per hour, wind gusts of 320 kilometres per hour (SPC 2016) and waves that were modelled to have exceeded 10 metres in parts of Tanna and 16 metres in parts of Erromango (SPC 2015). The resulting strong winds, storm surge, and flooding destroyed homes, schools, health facilities, crops, and livestock across huge areas of the country (Government of Vanuatu 2015a). An estimated 65,000 people were displaced, approximately 17,000 buildings were damaged or destroyed, and 96% of food crops in the worst affected areas were damaged or destroyed (SPC 2016). Economic disruptions were also significant because of impacts such as interruption to the tourism sector. Although the estimates vary, despite the severity of the event,

fatalities were low. The Government confirmed just 11 fatalities nationally (SPC 2016) and the European Union estimated 18 nationally, with five of these in Tanna (EU 2015). It was reported anecdotally that three of these were in the Whitesands area of Tanna, where the research was carried out, but none were in the communities visited. The total losses from TC Pam were estimated to be 64.1% of Vanuatu's gross domestic product, or USD449.4 million (Government of Vanuatu 2015), and recovery is ongoing. In the cyclone's immediate aftermath, it was estimated that more than half of the population required emergency food assistance, around 40% required drinking water, and almost a third required emergency shelter (UN OCHA 2015).

## National, local, and program context for the study

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### *National context*

Vanuatu is well established as one of the most disaster prone countries in the world, with cyclones, volcanoes, earthquakes, tsunamis, droughts, and floods amongst the hazards faced (UNU 2015). This ranking considers both the range of hazards faced and the social, economic, and ecological conditions of the country, as these can help or hinder risk reduction, response, and recovery efforts. Vanuatu is made up of 83 islands scattered across 1200 square kilometres of Pacific Ocean, leaving remote populations isolated and making access and service delivery difficult. Vanuatu is listed by the United Nations as a small island developing state and a least developed country, meaning it has low gross national income, low human resource capacity and high economic vulnerability (UN 2016).

In recent years, the Government of Vanuatu has been supported by various agencies, in particular the Yumi Redi consortia (CARE, Save the Children, Oxfam and French Red Cross), to strengthen the disaster management system at a national level. This has resulted in improvements such as standardisation in community level damage

assessment forms, and guidance on establishing CDCCCs so that agencies working at a community level use common processes. It has been reported that national systems and structures had "proved satisfactory in meeting the needs of previous, smaller scale disasters," but that TC Pam was of a far greater scale than previous disasters and consequently national systems were significantly stretched (Barber 2015 p2).

TC Pam highlighted an important challenge in disaster management in Vanuatu – the difficulty in extending national capacity across to the provinces and islands across which the population is scattered. The employment of provincial disaster management officers is a positive development in this regard, but even with a dedicated position at the provincial level, the resources needed to extend across the islands in each province remain significant. In this context, the work of non-governmental organisations and international non-governmental organisations, such as CARE and other Yumi Redi consortia partners, are important and valued by the NDMO as filling an important gap in delivery and outreach (Welegtabit 2016, Samson 2016).

## *The population, livelihood, and geographical context of the field work*

As this is a comparative study, it is critical to recognise the differences between the three islands in terms of their cultural, livelihood, and geographical context. Vanuatu is a country known for its geographical and cultural diversity and the three communities are, by their nature, different.

Aniwa is a small coral island that rises just 42 metres above sea level. The island is the smallest in Tafea Province and measures four kilometres wide, roughly north south, with a large saline lagoon Itcharo (Tiaro) in the north of the island that is open to the sea. The southern coast of the island has high rising cliffs, facing strong southerly winds and strong sea currents. There are no permanent rivers, streams, or lakes on the island, so the population of 488 relies on rainwater for their freshwater consumption and experiences periodic drought conditions (Whitfield 2015). As well as some market crops, the island is known for its sweet oranges, which along with sandalwood were an important cash crop prior to TC Pam.

Erromango is the largest island in Tafea Province, measuring 48 kilometres long and 32 kilometres

wide, with a total land area of about 887 square kilometres (Whitfield 2015). Its volcanic origins give it a mountainous geography, with inland peaks that slope to the narrow coastal plains, where most of the main communities are located (Whitfield 2015). Sandalwood was an important asset prior to TC Pam.

Tanna is the second largest island in Tafea Province after Erromango (Whitfield 2015), and it has an active volcano, Mt Yasur, in the north west of the island. The communities of Whitesands, which were the focus of the study, are around the base of the volcano, and they experience ongoing ash falls as well as the ongoing threat of severe eruptions. Tanna is one of the most populated islands in Vanuatu with 29,000 inhabitants, and it is the provincial centre of Tafea Province. There are numerous streams and rivers, particularly in the mountainous and rugged interior. In addition to sandalwood, the communities visited had some handicraft and market produce income sources prior to TC Pam. Volcanic activity increased in early November 2015 after TC Pam and remains at Level Two (Vanuatu Meteorology and Geo-Hazards Department 2016).

## *CARE's DRR programming in Tafea Province*

The DRR programs studied were implemented by CARE International in Vanuatu and supported by the European Union through the European Commission's Humanitarian Aid and Civil Protection department (ECHO) through the Yumi Redi Project (from 2011-2016), and the Australian Government and the Australian public through the Australian NGO Cooperation Program (ANCP) funded Yumi Strong project (from 2011-2016). The Yumi Redi Project is implemented by a consortium of agencies including Save the Children, Oxfam and the French Red Cross. The study was funded by the Australian Government through the Humanitarian Partnership Agreement (HPA).

CARE International in Vanuatu has been working in Vanuatu since 2008, and at the time of TC Pam CARE had a particular focus on working to strengthen Community Disaster and Climate Change Committees

(CDCCCs) and the Tafea Provincial Disaster and Climate Change Committee (PDCCC). It was also focused on empowering and engaging women and girls across their programs. Social inclusion, gender equality, and women's empowerment are important principles of CARE's work globally, and they took a proactive approach to gender integration in their DRR activities.

Project approaches also aimed to enhance communication and strengthen the linkages between communities, the Area Councils, and the province. Provincial level activities focused on increasing the capacity of the Tafea Provincial Disaster Committee (PDC) and Area Council Secretaries to prepare for, assess, and respond to disasters, and activities included training and facilitation of a multi-hazard simulation exercise.

### **Specific program interventions in each of the communities were to:**

- Use NDMO guidance to establish a CDCCC and a SDCCC, and provide training on their responsibilities, from preparedness and response to initial assessment
- Work towards equal female membership of the CDCCCs through awareness raising, gender and leadership training, and allowing space for women to join and take on leadership roles in the CDCCC
- Support community led risk, resource, and capacity mapping through transect walks and focus group discussions to develop a community profile using the NDMO template
- Support the CDCCCs to develop and monitor their own CRPs based on the NDMO format
- Test these plans through multi-hazard disaster simulations, including completing initial assessments and sending these on to the provincial and national authorities
- Distribute early warning kits such as vests, loud hailers, and cyclone tracking maps, and provide training on their use and maintenance
- Provide basic first aid (BFA) training in partnership with Vanuatu Red Cross Society, distribute BFA kits, and give training on the use and sustainability of the kits
- Support implementation of some small scale physical risk reduction measures
- Deliver notice boards as a means of communicating CARE activities and other information, such as weather updates
- Share information with the CDCCCs and Area Council Secretary in advance of potential hazard threats
- Complement these DRR initiatives with additional climate change awareness, agriculture, and nutrition activities

### **Specific program interventions at the provincial and national level were:**

- Disaster management planning and training for the Provincial Disaster Committee, including establishment of an Emergency Operations Centre
- Facilitating a multi-hazard simulation exercise that linked to the national, provincial, and community level
- Providing ongoing capacity support to the NDMO, including support in standardising forms and processes
- Co-leading in the national Gender and Protection Cluster and participating in the Water Sanitation and Hygiene, Education, and Food Security and Agriculture Clusters
- Collaborating with partners in the Vanuatu Humanitarian Team (VHT) and the national Community Based DRR Working Group



Photos 1 to 6 Some examples of CARE's work in Tafea Province

### 3. METHODOLOGY

The study uses data gathered from secondary sources, as well as participatory field research in nine communities in three islands in Tafea Province in southern Vanuatu, and further interviews with other stakeholders at the national and provincial level. The study draws out analytical insights from the data to understand the differences between the communities that had, and had not had, DRR programming. The field team compared the data from three communities on both Erromango and Aniwa Islands that had participated in CARE’s DRR programming before TC Pam, and three communities on Tanna Island that had not had DRR programming from CARE or others in the years leading up to TC Pam. It uses a quasi-experimental methodology (White and Sabarwal 2014) in which the communities that had participated in DRR programming prior to TC Pam are the treatment group and those that hadn’t are a control group. For clarity, these are referred to as DRR communities and non-DRR communities respectively.

The study looked at four aspects of the impact of DRR programming: community actions to prepare for and respond to TC Pam, the damage and loss experienced, the recovery, and the gender and social inclusion aspects.

#### Data sources

##### Participatory data collection tools

A number of participatory research methods were used during the field work. Detailed guides were developed for each community interaction, and the facilitators and note takers used these to guide and document the discussion. A focus group discussion with the community gave an overall picture of their experiences, a timeline of the event, and the specific actions taken. Next, separate discussions with women and men allowed the team to delve more deeply into the specific actions and experiences of the two groups, including their reflections on community leadership. A focus group discussion with members of the CDCCC gave more detailed data on the specific actions of the committee and of their engagement with the

Area Secretary and provincial officials. Subsequent semi-structured interviews with men and women allowed the team to follow up specific aspects of the group discussions, and to develop deeper knowledge and understanding of individual experiences. These interviews were undertaken with two men and two women in each community, and with a male and a female member of the CDCCC. Community engagement data are included in Table 1, and further disaggregated data is available from CARE.

Team observations and a transect walk gave further understanding of the physical context and locations of key infrastructure, such as safe houses and roads.

Erromango	Male	Female
Dillon’s Bay	4	3
Happy Land	8	6
Port Lucy		
<b>Total Erromango</b>	<b>12</b>	<b>9</b>
Aniwa	Male	Female
Isavai	12	5
Ikaokao	11	32
Imatu	12	14
<b>Total Aniwa</b>	<b>35</b>	<b>51</b>
Tanna	Male	Female
Waisisi	21	11
Emrawang	18	8
Lokaim	8	8
<b>Total Tanna</b>	<b>47</b>	<b>27</b>
<b>Total for study</b>	<b>94</b>	<b>86</b>

Table 1 Attendance at meetings

## Secondary data

Secondary sources were also important and these are listed in full in Annex 2, List of documents reviewed. In addition, damage assessment data was sought

from CDCCCs, the NDMO, and the PDC, including reviewing initial rapid assessments forms where available.

### The research questions

There were four main questions that the study sought to answer:

1. *What did the communities do before, during, and after TC Pam?*
2. *What damage and loss did they experience?*
3. *How is their recovery so far?*
4. *What were the gender and social inclusion aspects?*

#### What did the community do before, during, and after TC Pam?

The data gathered from the participatory exercises was analysed by the team to gain a picture of community actions to prepare for and respond to TC Pam. A standardised checklist was developed to do this, using the NDMO's CRP template, which CARE had used to develop a CRP with the communities in Aniwa and Erromango. The CRPs specify the actions to be taken by different groups (the whole community, the CDCCC, women, men, and youth) at each of the five stages of a cyclone event. These five stages are aligned to the NDMO alerts: 24hrs before (known as blue alert), 12hrs before (known as yellow alert), during (known as red alert), within 24 hours of the event, and initial community recovery. The different preparedness and early response steps that a community actually took (or did not take) were recorded and compared to the recommended steps as per the checklist. Analysing and consolidating the results of the participatory exercises into the checklist resulted in a percentage score for each group, at each stage of the event, and a total percentage per community and per island. The checklist reflected the intended outcome of the DRR programming (and is included in Annex 1).

#### What damage and loss did they experience?

The second research question was to consider the impact of the preparatory actions on the level of damage and loss experienced. To be able to do this, the team needed an idea of damage at the household and community level. For the DRR communities, detailed gender disaggregated data was gathered by the CDCCCs, on forms that they had ready, in the hours and days immediately after the winds died down. This data gave a detailed picture of the range of damage and loss sustained to water supply, crops, livestock, and infrastructure. These forms were available from either or both the NDMO and the CDCCC themselves.

In the non-DRR communities, this data was not available, despite enquiries and searches at the community, provincial, and national levels. These communities had received no training in completing such assessments, and did not have copies of the forms to use. In the absence of this data, the study used population data, and the number of houses that withstood the cyclone, gathered in community meetings, to estimate the total damage to houses. In addition, the community meetings were a source of information about other damage and loss, such as to boats and household items, which allowed the team to understand the wider impact of the DRR programming on damage and loss.

The housing damage data from Aniwa and Erromango and the damage estimates from Tanna are presented as a percentage, representing the proportion of houses that were significantly or completely destroyed.

## How are they recovering now?

As well as understanding the immediate aftermath of the event, the study was also concerned with community perceptions of their recovery. The study was done just over a year after TC Pam, and in the participatory exercises, the community was asked how close to 'normal times' they had returned. To aid this discussion, a visual representation of a cycle of recovery was presented with 'early recovery', 'half way back', 'almost there' and 'back to normal' as options. They identified where they were on the cycle, which gave the team an idea of their perspectives on progress and stimulated a rich discussion of the range of factors still holding them back from a full recovery.

## What are the gender and social inclusion aspects of these findings?

A key focus for CARE's DRR work in the DRR communities was social inclusion, gender equality, and women's empowerment, and the study sought to explore these issues through the field research. Separate women and men's discussions, interviews with both women and men, and gender-disaggregated data gave the team the data needed to analyse these aspects. The field guides included questions that explored the differences between women's and men's experiences of TC Pam, women's decision making, and wider perceptions of women's roles and leadership in disaster management.

## The field team

The field team was selected by CARE International in Vanuatu to provide a gender balance and a high skill level. The team was well versed in using participatory tools and had strong community relationships. The team applied CARE's field trip protocols and they rotated designated roles, which they took seriously. Having staff on the team with strong monitoring and evaluation skills meant that data collation, record keeping, and analysis could be done during the trip. The team shared in a presentation of the initial results to a wider group of CARE programming staff.

During daily debriefs, issues were discussed and improvements were made to the tools and methods.

It was evident during the study that the field team was comfortable with seeking and hearing the views of different members of the community. They treated women and men with respect and actively encouraged open and transparent dialogue. This approach meant that women and men could share their ideas and views about TC Pam, and about disaster risk reduction more generally.





## Community selection

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The study design recognised that there are differences between the communities and between the islands, and that selection of the communities was based on the location of CARE's programming before and after TC Pam. The study sought to build a contextual understanding of each location using well established participatory data collection methods and triangulation of the data. Efforts were made to ensure the voices of women, men, and people with disability were heard, and the data was analysed as a team to validate the findings.

Communities were visited in two rounds of fieldwork. The DRR communities in Erromango and Aniwa were selected as they had participated in comprehensive DRR programs with CARE. The program covered whole islands, and in the small island of Aniwa, the team visited all three

communities that participated. In Erromango and Tanna, which are much larger, the team visited a selection of three. The Whitesands communities of south east Tanna were selected as the non-DRR communities because CARE had existing, although new, relationships there through delivery of relief after TC Pam and the post-cyclone commencement of DRR work.

In the first 10 day round of field work, the team visited the three communities in Aniwa and three communities in the Whitesands area of Tanna. The data from the first round of field work in Aniwa and Tanna was presented to the program team of CARE International in Vanuatu. A second stage of data collection in Erromango and an additional community in Tanna (Lokaim) took place approximately one month after the first field visits.

## Limitations of the methodology

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### *Community timing and availability*

In any participatory field assessment, it is critical to plan sessions to fit in with local priorities and activities. In some cases, this meant the field team were not able to spend as much time as initially planned with a community. In Aniwa, a death in one community meant the field team had to shorten some meetings and shift some to the weekend. In Erromango, the field team were not able to complete each of the participatory activities in Dillon's Bay

due to a busy community schedule, and the neighbouring communities of Port Lusi and Happy Land meetings were done together. The lower participation numbers in Erromango are reflected in the attendance data, and in each case, the team endeavored to triangulate findings and ensure no critical knowledge that would have shifted the findings of the study was missed.

### *Cyclone track*

As seen in the map of the TC Pam track in Figure 1, the island of Aniwa experienced a lesser force from TC Pam than the Whitesands area of Tanna, limiting the validity of comparing damage data. Following the first field trip to Aniwa and Tanna, Erromango was added to the study to be able to include data from

DRR communities that had experienced a similar force to Tanna. It is relevant to note that due to time constraints, the Erromango communities were not covered as deeply as those in Aniwa, but the results there were consistent with the results in Aniwa.

## *The intention that the control communities had no DRR treatment prior to TC Pam*

A basis for the methodology was that the non-DRR communities on Tanna had not received any DRR support prior to TC Pam. It became apparent during the first field visit that a single DRR workshop had been delivered just two weeks prior to TC Pam in the third community visited (Imaio). The community, and in particular the Area Secretary that lives in the community, reported this as being very useful. The DRR workshop, and the presence of a respected Area Secretary in the community who shared the warnings,

did confuse the results for Imaio. They achieved higher ratings for the timing and preparatory actions taken (up to 40%) than the other non-DRR communities in the study. In order to ensure the methodological approach was maintained (where the non-DRR communities had not received any DRR support prior to TC Pam), an additional community in the Whitesands area of Tanna was included, and the Imaio data was excluded.



## 4. RESULTS

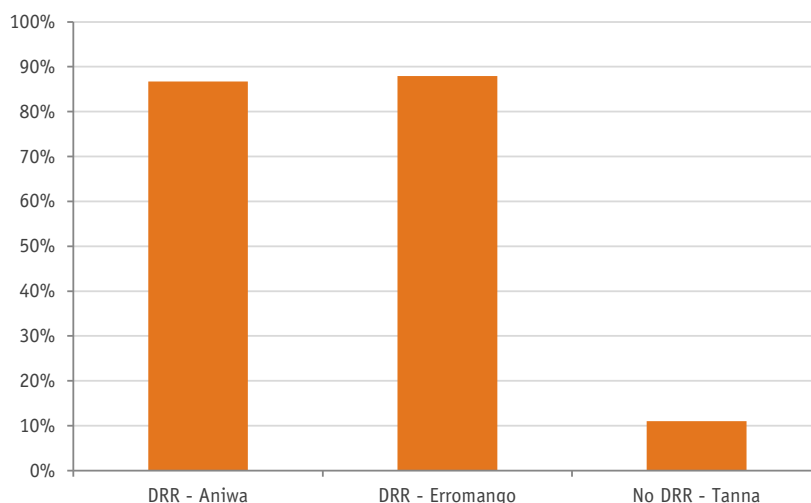
As described in the methodology section, there were four main research questions, which are explored here in turn.

### What did the community do before, during, and after TC Pam?

The team analysed the data that came out of the participatory activities using a checklist that reflected the content of their own CRP. The CRPs listed the actions to be taken before, during, and after a tropical cyclone, and by analysing the data on what each community actually did or didn't do against the checklist, the team generated a measure of DRR action for each stage of the event and for each group in the community. The results are expressed as a percentage, with 100% the score if every recommended action was taken.

The early warnings issued by the NDMO were heard across all three islands, either directly in phone alerts and radio broadcasts, or via family and friends

in larger population centres. However, the action that was taken on the basis of these warnings varied significantly between those that had and had not had DRR support prior to TC Pam. The communities that CARE had worked with understood and took the alerts seriously. They acted early to prepare their homes and community in a coordinated way. Figure 2 shows the total score for each island, with the communities in Aniwa and Erromango together scoring 87% and 88% respectively. Their early action meant that when the cyclone was upon them in the early hours of the morning, almost every person was safe inside designated houses with food, water, and bedding.

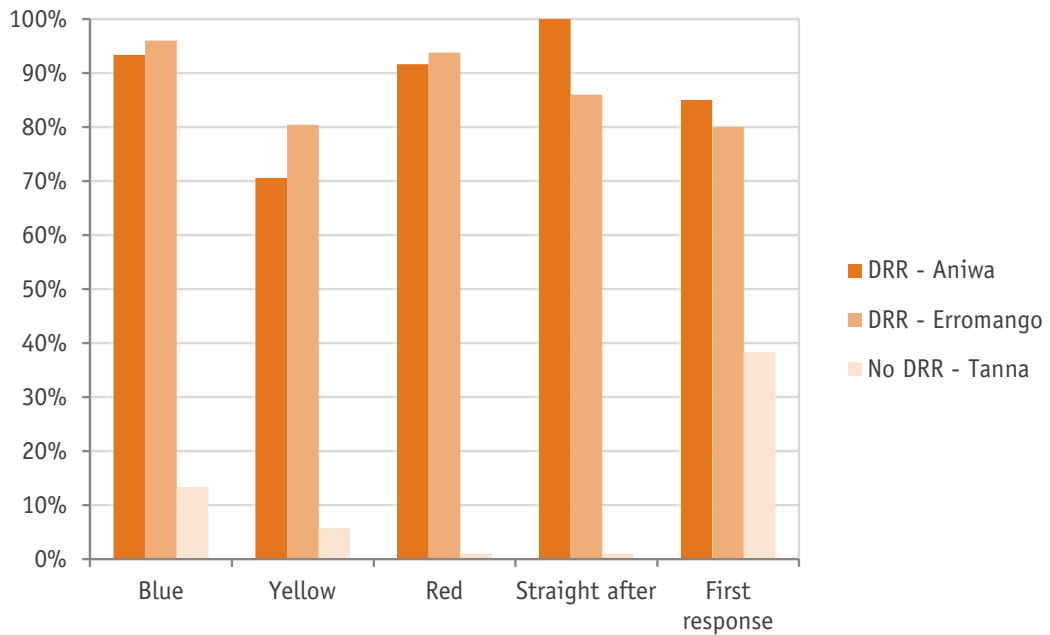


**Figure 2** The total percentage scores achieved by the communities in Aniwa, Erromango and Tanna for their actions before, during, and after TC Pam.

In contrast, in the non-DRR communities visited in Tanna, they heard but did not fully understand or take the alerts seriously, and they were all sleeping in their own houses, having taken little or no action to prepare, as the winds reached Category Five. The total score for the Tanna communities together was 11%.

Breaking these total results down by the five alert phases, Figure 3 shows the total scores for the communities visited on Aniwa, Erromango, and Tanna. The communities in Aniwa and Erromango that had DRR scored consistently higher than the Tanna communities across all stages. The Aniwa communities

scored 80% to 100% across all but the yellow alert, when they scored 71%. In the yellow alert stage, one of the safe houses in Aniwa had inadequate supplies of food and water, and there were two incidences of people not moving to a safe house and needing to be moved later by the CDCCC. In Tanna, the communities' scores were less than 13% and as low as 1% for all but the first response, when the score increased noticeably to 41%. This reflects their familiarity with disasters built up over many years. At this stage, they were clearing roads and rebuilding their homes family by family, not as a whole community. They supported people in their own families that needed extra help.



**Figure 3** Percentage scores broken down by each stage achieved by the communities in Aniwa, Erromango, and Tanna for their actions before, during, and after TC Pam.

### *The experiences of communities that had DRR*

Looking in more detail at the results community by community, and combining the data with the stories told in each community, gives a more detailed picture of community experiences in TC Pam.

Isavai in Aniwa has a population of 176 across 48 households (PDC 2015). The CDCCC shared the alerts and coordinated the preparatory actions. During the blue and yellow alert, they worked together to cut trees near houses, strap roofs, and prepare their personal items. The whole community was inside one of the four safe houses during the event and there was some water and food inside. One safe house did not have enough food or water inside and members of the CDCCC went to a nearby kitchen to prepare food in the early morning. The primary school, a shared safe house with the population of Imatu, was very full and there were no inside toilets. Some women and children had to be escorted to outside toilets during the red alert by the standby of male CDCCC members and strong young men who were on alert all night. The first assessment was completed at 6.30am on the morning after TC Pam and all sections of the form were completed neatly and in detail.

Ikaokao in Aniwa has a population of 247 across 69 households (PDC 2015). The community worked

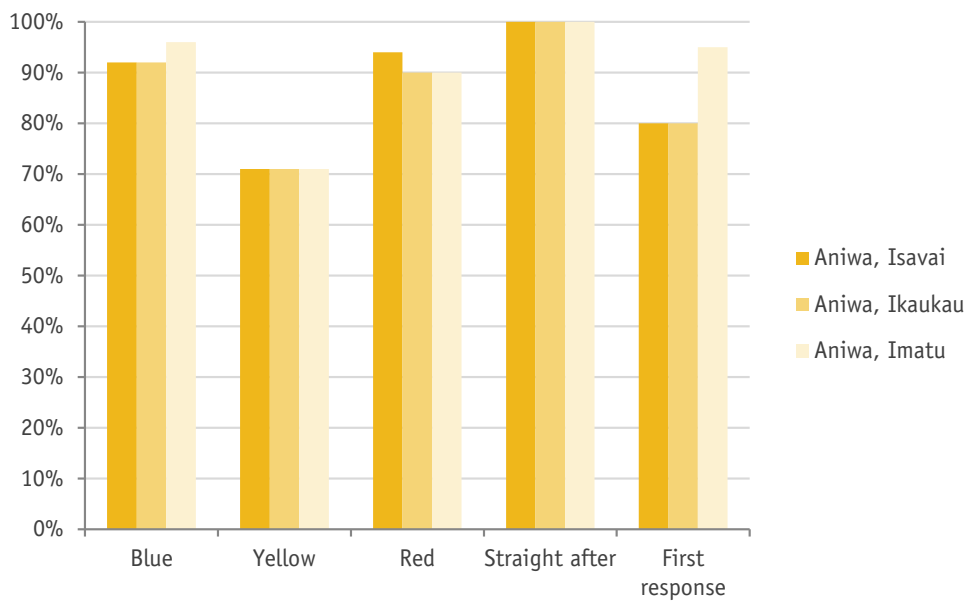
together to prepare once the initial alerts were received, as the CDCCC shared the alerts and coordinated the preparatory action. All but one man and child evacuated to the safe houses or stayed in pre identified strong houses with support from the CDCCC. The man and child that stayed at home (in Ifungawe, the John Frum Movement area) stayed because the man thought it was strong enough. The CDCCC checked on them after the roof flew off and helped them to a safe house. The safe houses were well set up with bedding but there was not enough food inside one of the safe houses. The CDCCC cooked for people. Some male CDCCC members and strong young men stayed on standby all night, keeping watch on the community as the cyclone progressed through the night. The CDCCC rotated responsibilities, with male members awake at night and the female CDCCCs doing the first assessment in the morning. The initial assessment was completed the morning after TC Pam in detail, except for one page that was left blank (water supply and damage to food and communications).

Imatu in Aniwa has a population of 91 across 21 households (PDC 2015). The CDCCC coordinated action in response to the alerts and it has a female chair who plays a respected role by sharing

information from her home, which is centrally located. The community worked together to prepare and move to three safe houses, one of which was shared with Isavai (the primary school). One man with a disability stayed at home as he believed his house was strong, and he held a custom belief that if he left the house, it would be blown down. When some male CDCCC members and strong young men who had stayed on standby went to patrol the community, they saw his house had started to be damaged and they moved him to the safe house in another part of the community. The

initial assessment was completed at 2pm the day after the cyclone, and all sections were neatly and comprehensively completed.

Figure 4 shows the results for the communities in Aniwa, reflecting the dip in scores in the yellow alert discussed above, and also a dip the first response for two of the communities. This dip in the first response, in Isavai and Ikaokao, reflects that the community did not give specific attention to cleaning up areas that may breed mosquitos and lead to malaria and other mosquito borne diseases.



**Figure 4** Percentage scores achieved by the communities in Aniwa for their actions before, during, and after TC Pam

Dillon’s Bay in Erromango has a population of 615 across 150 households. When the alerts were issued by NDMO via radio and text messages, the CDCCC went around the community to make sure people were preparing. Young men helped people to prepare their property and the CDCCC worked out which houses were safest. Women generally worked to prepare food, went to gardens to harvest food, and prepared household goods. The CDCCC also worked with boat owners to move their boats away from the coast and to secure them. The CDCCC organised people to move to one of four houses that held between 30 and 54 people in each. After the cyclone, the CDCCC coordinated the community recovery and completed an assessment, and the community looked after the 11 people who sustained injuries.

Port Lusi in Erromango has a population of 142 in 35 households. At first, not everyone took it seriously,

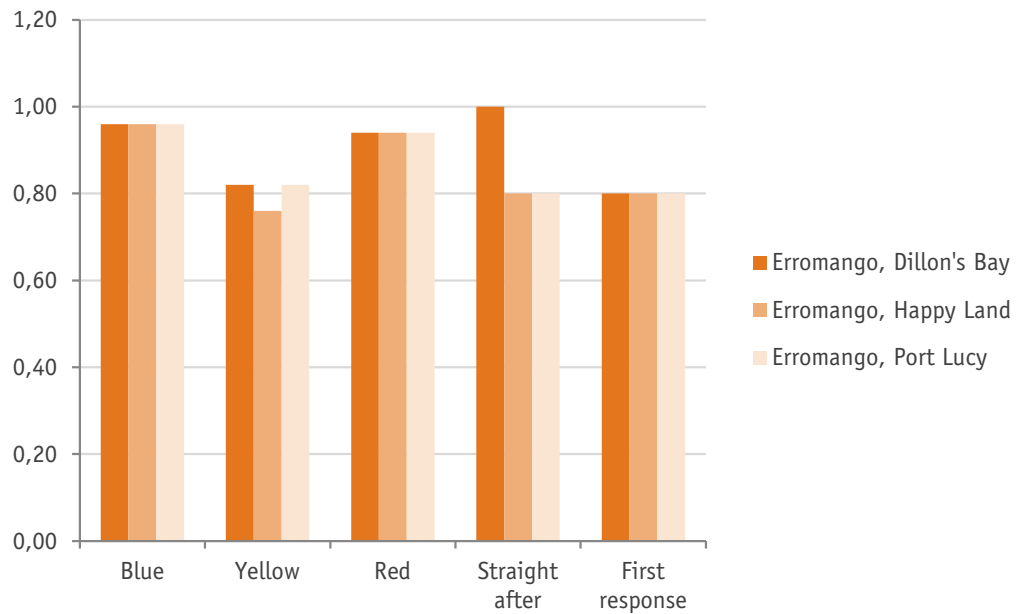
but when the blue alert was issued and the CDCCC made an announcement, they all started to act. The CDCCC prepared three safe houses with water and food and moved everyone there. They already knew which houses were strongest, but they also put new leafs on them during blue and yellow alert for reinforcement. The women fed the children before going to the safe houses, and the women CDCCC members gave their vests to young men to join the stand by team that worked through the night. The community trusted the CDCCC and listened to them, and they worked together to prepare and to rebuild, rather than as individual families as they had in the past. According to interviews, having a CDCCC to coordinate their efforts made the work ‘easier and better’, and when the alerts came, the CDCCC understood the meanings of each alert and felt confident because they had done a simulation for each stage. They did an assessment within two days

and worked together to clean up and rebuild. Since the cyclone, they have built three safe houses for the community with local materials.

Happy Land in Erromango has a population of 193 in 43 households. After working together to prepare their homes and the surrounding areas, the community moved to the nakamal (a male dominated community house), which was the safe house. They had reinforced the roof and covered the door. During the red alert, the CDCCC realised that some women were missing. They found out that they were menstruating and were respecting the local custom that women should not enter a nakamal when they are menstruating. They had stayed in a tin house close by, but the

CDCCC knew it was not strong enough. The CDCCC, including the chief who is the CDCCC chair, went to get them, agreeing to do a traditional ceremony after the cyclone. Because the community had not had a cyclone for a long time, they had not rebuilt strong houses, so many fell down. After the cyclone, the CDCCC did an assessment within two days and coordinated the clean up and rebuilding.

The data in Figure 5 reflects the DRR actions taken at the community level in Erromango. The lower score in Happy Land and Port Lucy for straight after is because they completed their assessment two days after TC Pam, a day longer than the recommended 24 hour period.



**Figure 5** Percentage scores achieved by the communities in Erromango for their actions before, during, and after TC Pam scores

### *The experiences of communities that had not had DRR*

Waisisi in Tanna is a coastal community that has a population of 137 across 73 households (PDC 2015), with roughly half along the waterfront and the other half scattered along the hillside behind. Community members heard the alerts from the radio, text messages, and some family members outside the community, but they did not share the messages among the whole community. They did not take it seriously, although some women did go to the garden to cut manioc and banana leaves ‘just in case’. Three or four households started to tie their

roofs with bamboo and coconut leaves – but only as the wind started to get strong and some damage was experienced. They all went to sleep in their own houses, but had to move during the red alert when their houses started to be destroyed. As a result, many people in the community were moving around during the height of the wind and the storm surge. There were four cases of non-fatal injuries: one woman and her child were lifted up by the wind into the trees behind the community, one boy was trapped under a fallen tree, and one man was speared



with flying wood. All their fishing boats were destroyed or seriously damaged. The community dealt with all the injuries and, once the road was cleared around three days after the cyclone, a man drove to the Area Secretary to get a population form to complete. Detailed community damage data was not collected at this stage, and has not been found.

Emrawang in Tanna is a highland community that has a population of 405, across 95 households in four settlements (PDC 2015). Community members received the alerts as individual households from radio, NDMO texts, and family, but didn't share it amongst rest of the community. They didn't take it seriously and didn't understand all the information in the alerts. They believed that as a cyclone had not hit the community for many years, neither would this one. They also did not understand the details in the alerts, such as knots as a measure of wind speed, or Category Five as a measure of cyclone strength. A few women secured their belongings inside the house and these things were saved even when the roof blew off. No other preparations were taken, and more than half of the women went to garden as usual on the day of the cyclone because it was a fine morning.

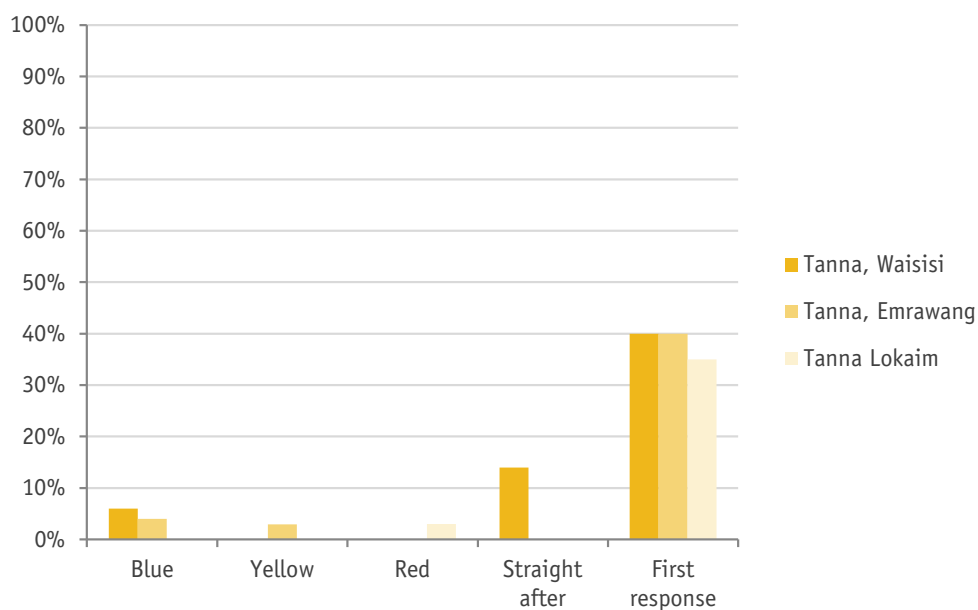
Families went to sleep in their own homes and then had to move from house to house as their homes started to be damaged. Some families reported moving up to four times until they were all crowded into the few houses that were not destroyed. A past practice had been to build strong local houses and to check them at the start of the season, and to also secure firewood and food, but they had not had a cyclone for such for a long time that they had stopped doing this. Two days after the event, one person collected the population form from Area Secretary. Detailed community damage data was not collected at this stage, and has not been found.

Lokaim in Tanna has a population of 136 across 47 households (PDC 2015). Women and men heard the warnings on the radio and via text message, and from family and friends in major towns, but they did not take it seriously. One woman reported that when she tried to talk to her husband, he didn't take her seriously and they didn't do anything. Men reported that the terms in the warnings, like Category Five for strength and knots for wind speed, were confusing. One woman followed her copy of a cyclone-tracking map via text message until the phones went down



around midnight. The women cooked for their children as usual that evening and they went to bed in their own homes: no actions were taken by the community until the winds were strong and damage was happening. Some men started to tie down their roof as the cyclone was hitting them, and women and men reported that they moved their families to a traditionally designed house or to the school once their own homes started to lose their roofs. Young men moved one man with a disability and one elderly woman in their family to the strong local house when the cyclone was hitting. Some women reported that they needed help to move their families during the storm, but the community didn't come together to help each other. Once inside, women cooked for the children, but many families had not brought food so their children were hungry and crying. Some men went out and searched for bananas. At the height of the storm, men had to lie on top of the roof of the locally designed house to stop the roof from blowing away and the wind was so strong it tore the clothes from them. They worked as individual families, not as a whole community, to clean up, rebuild houses, and replant gardens.

Figure 6 shows the results by community in Tanna. While some actions were taken in the non-DRR communities in Tanna, none of these actions were started until the red alert, when the winds were strong and damage was already happening around them. Some men were trying their roof down or putting weights on top, and families were moving from house to house, when they would have been safest inside a designated safe house. Preparatory work that was done was not coordinated or consistent across the community, but rather it was done 'wan wan house', meaning by separate families. The action was not comprehensive and did not include actions such as cutting trees close to the house or preparing and moving to safe houses.



**Figure 6** Percentage scores achieved by the communities in Tanna for their actions before, during, and after TC Pam scores community scores



While there were no deaths in these communities and surprisingly few injuries (just four in Waisisi), it was widely reported that many people were moving from house to house at the height of the cyclone, putting themselves at significant risk. This highlights the critical importance of appropriate and early preparation, as moving around in a red alert is extremely dangerous. Provincial discussions suggested that, considering the strength of the cyclone and the lack of preparatory action, it is

surprising that the deaths and injuries were so low. Provincial informants attributed the low numbers to the height of the cyclone being in the early morning hours, so people were mostly already inside, and the predominance of local building materials in the seriously affected areas of Tafea, which are not as dangerous as modern building materials when they come loose. Anecdotally, it was reported that flying tin sheeting and falling bricks caused the two deaths in the Whitesands area.

## What damage and loss did the communities experience?

The data in Table 3 shows the damage to housing in each community, either gathered from damage assessment forms in the cases of Aniwa and Erromango, or estimated using population data and community discussions in the case of the communities in Tanna. In the DRR communities, the

proportion of houses that experienced significant damage, or were destroyed, was between 2% and 36% in Aniwa, and between 59% and 81% in Erromango. In Tanna, between 94% and 96% of houses suffered significant damage or total destruction.

Community	Total houses before TC Pam	Damaged houses: 'big damage' or destroyed	Proportion of houses destroyed (%)
<b>DRR Communities:</b>			
Aniwa: Isavai	48	1	2
Aniwa: Ikaokao	69	25	36
Aniwa: Imatu	22	3	14
Erromango: Dillon's Bay	150	75	50
Erromango: Happy Land	43	35	81
Erromango: Port Lucy	36	27	75
<b>Non-DRR Communities:</b>			
Tanna: Waisisi	73	70	96
Tanna: Emrawang	95	92	96
Tanna: Lokaim	47	44	94

**Table 2** Compiled damage data for Aniwa, Erromango, and Tanna

As shown in Figure 1, the eye of TC Pam passed down the west coast of Erromango and almost directly over the communities in the study, and then down the west coast of Tanna. Aniwa is off the north east coast of Tanna and hence was further from the eye than either Erromango or Tanna. In the case of Aniwa, their lower score would have been to some degree because the strength of the cyclone was less. The lesser damage in Erromango compared to the Tanna communities is more difficult to explain given the range of factors that operate at the local level and contribute to actual damage

experienced. Studies have found that local and event specific variables, such as the duration of the storm and storm surge, time of landfall and location, coastal ecology, and coastal embankment, influence cyclone mortality and, by association, damage and loss (Bimal 2009). Understanding and combining cyclone specific factors with the local geography, specific locations of the houses, and the structural integrity of the actual houses damaged would be a specialist task that was not possible in the scope of this study. However, in looking at the data available and the stories and experiences of the communities

visited, it does appear that DRR would have contributed to at least some of the reduced damage and loss in Erromango, although it isn't possible to say how much.

While acknowledging these limitations, some further observations can be made about the damage and loss at the community level. Although damage in Erromango was significant at up to 81%, people had safe places to sleep immediately after TC Pam and while rebuilding, even if it was inside a safe house. In the communities in Tanna, the safe houses were extremely overcrowded and, in some cases, were themselves damaged. There had been such serious damage to houses that many people, including children, had to sleep outside or under makeshift roofs. Coastal DRR communities protected their boats by moving them inland and weighting them down.

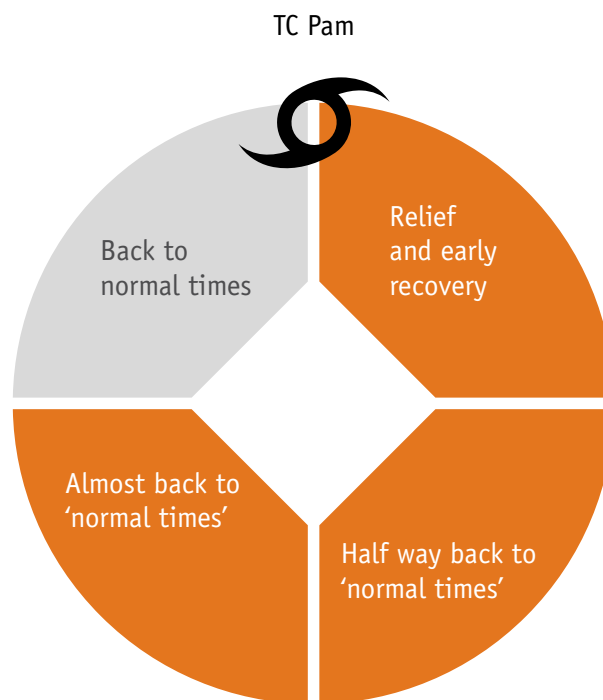
They did not lose any boats and could recommence fishing immediately after the cyclone. The boats in the non-DRR community were not protected and were almost all damaged beyond repair. All three islands experienced total or near total loss of gardens and other important crops, but in Aniwa and Erromango, the communities had harvested and prepared food. In Tanna, people ate fruits that happened to be ripe at the time of TC Pam and had fallen down in the strong winds, giving them food only for a few days. In Erromango, the community had gathered and prepared food in the early alert stages so they had food straight away, and a two week supply. Erromango and Aniwa communities also protected the water pipes that connected roofs with water tanks. This meant they could use the uncontaminated water in the tanks and collect the very limited rain that fell in the months after TC Pam.



## How are they recovering now?

In order to gather community perceptions of their recovery progress, the team prepared a picture of a cycle of recovery and asked the groups how far back to 'normal times' they were. Full recovery in all three locations is yet to be achieved. Across all three islands, a long dry period since TC Pam, driven by an El Niño phase, has slowed the regrowth of food crops and critical local materials to rebuild strong houses. As a result, some rebuilt houses have been made with green materials and will need to be replaced more quickly than usual. Also, important cash crops will take many years to recover, such as oranges (in Aniwa) and Sandalwood (in all the islands). In Tanna, the proximity of the communities

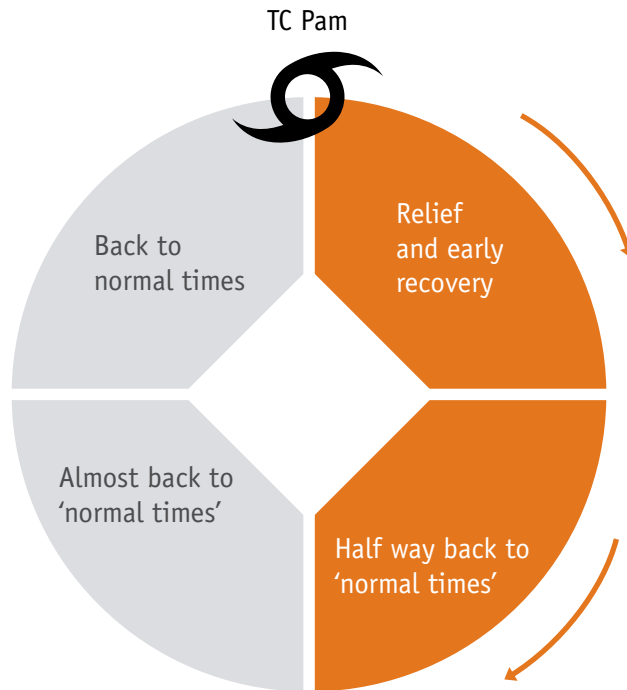
to the active volcano of Mount Yasur means they experience ash falls and associated acid rain. These have increased since the activity level was upgraded in November 2015 and cause damage to houses and crops, affecting community wellbeing. Despite these challenges, the islands have all made progress to recovery. All the communities have been cleaned up, crops have been replanted and houses have been rebuilt. The answers were very consistent between the communities on Aniwa and the communities on Erromango. Aniwa communities stated they are 'almost there' and Erromango communities stated they are 'half way back'. This data is reflected in Figures 7 and 8.



**Figure 7** Recovery cycle results combined for the communities on Aniwa

Aniwa did not experience the same level of damage as Erromango or Tanna as it was further from the eye of the cyclone, so recovery needs are less. Tanna and Erromango had major damage, but Erromango is a very large island with a lower population so they

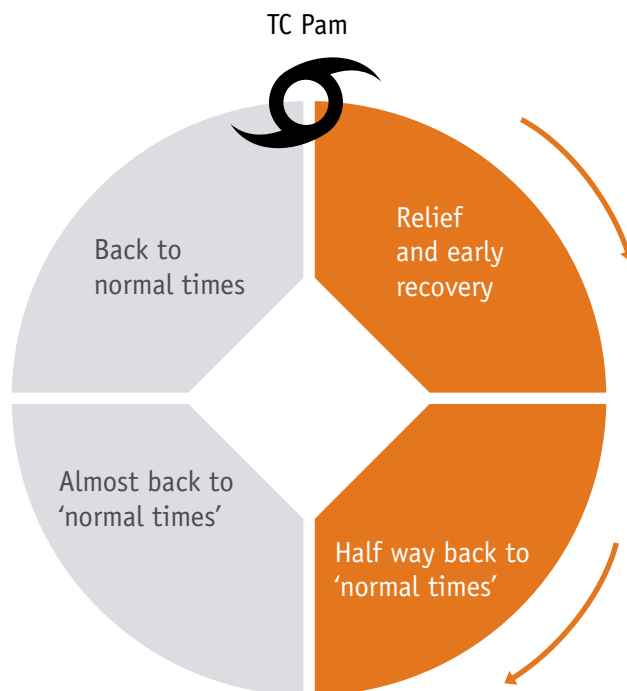
had more natural resources for rebuilding houses than Tanna. Women's economic activity in Aniwa and Erromango is getting back to normal (baskets and mat weaving) but the communities in Erromango also reported new pests affecting their crops.



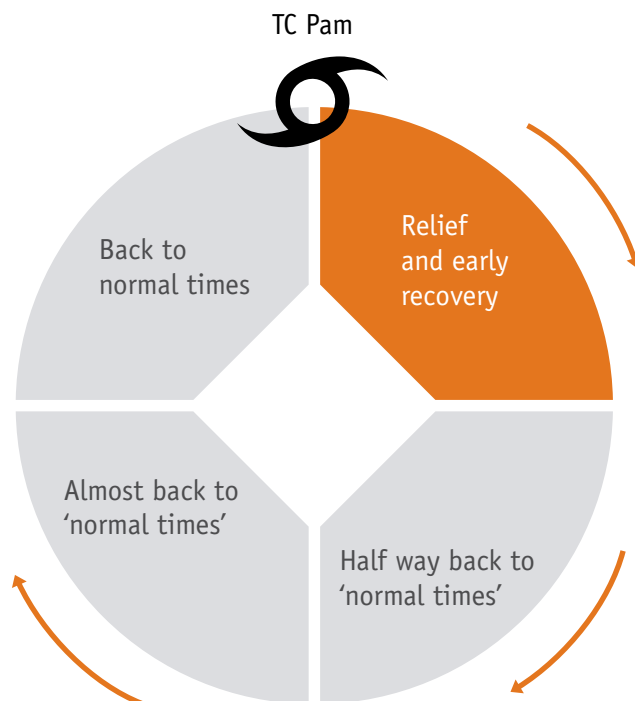
**Figure 8** Recovery cycle results combined for the communities on Erromango

On Tanna, people in Waisisi and Emrawang stated they were 'half way back', but in Lokaim people stated they were not yet 'half way back' and that they were actually worse off than before TC Pam. The community strongly attributes this to the volcanic ash fall. In Tanna, almost all houses were destroyed,

and the ash fall combined with the drought has slowed the recovery of local building materials. Poor building materials and ongoing ash fall mean that the houses they have built will need to be rebuilt far sooner than usual. This data is reflected in Figures 9 and 10.



**Figure 9** Recovery cycle results combined for Waisisi and Emrawang on Tanna



**Figure 10** Recovery cycle results for Lokaim on Tanna

Communities consistently reported that the ash fall is worse since TC Pam and that, as a result, they are unable to grow any leaf crops and must rely on root crops alone. While the activity levels of the volcano itself are not related to TC Pam, total loss of vegetation cover, and its slow regrowth due to the long dry from an El Niño phase conditions,

may mean that ash is falling to the ground now when before it may have been caught by covering leaves. Given the significance of this hazard for the communities, better understanding these links is important to be able to develop strategies to assist communities to progress their recovery and food security.

### *Loss of resources for recovery*

In coastal communities, fishing boats are an important asset for recovery. In the coastal community visited in Tanna, Waisisi, all the fishing boats were seriously damaged, most beyond repair. In the coastal community visited in Erromango, Dillon's Bay, none of the boats were damaged. Waisisi experienced a storm surge that reportedly caused most of the coastal damage, whereas Dillon's Bay experienced river flooding. To further explore damage to fishing boats in a community that also experienced a storm surge, the field team sought data from Port Narvin in north Erromango, where people reported that a storm surge up to five metres caused most of the damage that they experienced. During the preparation stage, the boat owners in Port Narvin moved all boats inland at least 20 metres, with the help and advice of the CDCCs, who followed the information they had received in the CDCC training with CARE. By taking this action, all of the community's five boats were undamaged and the community could start fishing again as soon as they

had the time after the initial clean up. In Dillon's Bay, the CDCCC advised the seven boat owners to prepare, so young men moved boats away from the coast or tall trees, tying the boats to trees and weighting them down with water.

As well as damage to houses, the loss of household items such as clothes and cooking pots are important considerations in recovery at the household level. In Erromango, the community reported that they secured important household items as part of their preparation, and that even when the house was destroyed or damaged, these items were saved. In Tanna, some women in Waisisi reported that they secured their household items before the houses were destroyed. As a result, although these women lost their houses, they did not lose everything inside. This was not the case for the other families that participated in the study in Tanna, who lost their homes as well as important resources for recovery, such as cooking pots and clothes.

## What are the gender and social inclusion aspects of the findings?

A critical part of CARE’s DRR work was addressing the gender and social inclusion aspects of DRR and the study considered these throughout. Establishing and supporting a CDCCC within communities was a key aspect of CARE’s work. The current membership of the communities that had DRR are included in Table 3. As well as using the NDMO’s standardised roles and responsibilities for the CDCCCs and the NDMO template CRPs to guide their work, CARE also required a gender balanced committee and provided gender and leadership training for the members. As the data shows, gender balance has not been entirely achieved, but the study found engaged and confident female members and that there was respect for their roles amongst the CDCCC and the wider community. In the DRR communities, the CDCCC focus group was well attended by male and female members, and in semi structured interviews with male and female community members and CDCCC members, the study

explored perceptions of female leadership in more detail.

In the Aniwa and Erromango communities, there was widespread support for women’s roles in the CDCCCs, who gave positive examples of their effectiveness. For example, sharing roles between women and men in Aniwa allowed men to patrol the area while the women supported people inside the safe houses. Chiefs in several communities voiced their support for women’s roles in the CDCCC, such as a chief in one Erromango community who said he thought female CDCCC members’ efforts in the preparation stage of TC Pam had encouraged women in the whole community to participate and to speak about their concerns. He also noted, as did others, that women could provide different, useful advice and ideas to the men, given their traditionally greater focus on the home and family.

CDCCC membership	Male	Female
<b>Aniwa</b>		
Isavaï	5	5
Ikaokao	4	4 (1 is the chair)
Imatu	6	2
<b>Erromango</b>		
Dillons Bay	4	4
Happy Land	5	3
Port Lusi	5	3

**Table 3** CDCCC membership in Aniwa and Erromango

In each of the communities visited on Tanna, there was not an active CDCCC. A small number of men identified as being in a CDC (Community Disaster Committee). These CDCs had been set up in 2009 by another NGO in a one off outreach across Tanna. The CDC was given a week of training, but there was no further follow up or support and no specific targeting of women as members.

Acknowledging inherent cultural differences between Aniwa, Erromango and Tanna, the study found that the voices of women were heard more loudly in the communities in Aniwa and Erromango than in the communities in Tanna. In Aniwa and Erromango, the

community gave evidence of specific actions they took to seek out and support women, children, and people with a disability in preparing, responding to, and recovering from TC Pam. In Tanna, women were not confident in speaking up in the community meetings, and some reported in the women’s focus group that they were not able to participate in community decision making and had to follow the chief’s instructions. In one community in Tanna, women reported that when they told their husbands that they felt concerned about TC Pam and that they wanted to do something to prepare, the men were not supportive and held them back.

## 5. DISCUSSION

*CARE worked with the communities across Erromango and Aniwa over a number of years, and established and tested community disaster preparation, response, and recovery capacity prior to TC Pam. The results above show that CARE's gender responsive DRR did have positive impacts, as had been observed anecdotally before the study. Reflecting on the study questions, some key discussion points can be made about the difference that such mid to long term gender responsive DRR programming has made to these communities.*

### Community preparedness and response

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A key finding of the study is that being able to receive early warnings is not enough to ensure preparation: people need active systems and knowledge of appropriate actions to take, and ongoing support is required to ensure that this is in place each cyclone season. While the alerts about the coming cyclone were widely heard across the communities that had not had DRR support in Tanna, people did not take them seriously or fully understand them. Families went to sleep in their own houses, even in Waisisi, which is on the coast and exposed to storm surge. As a consequence, people were put at substantial risk and had to move from house to house as they were damaged in turn, and this movement was done by separate families, without help. Timing of preparation is critical and, although some households in Tanna did act to tie down their houses or to prepare household items, they only did this when the wind was already strong. This reflects the importance not only of the actions taken, but also when those actions are taken in the onset of the cyclone.

The results from communities in Aniwa and Erromango reflect strong engagement with the DRR program, resulting in a coordinated community response when the alerts came. They scored above 80% in the DRR Checklist for all but the yellow alert stages of TC Pam (when scores were 70%). However, there are important opportunities to build on their experiences to further strengthen their capacity and scores, such as ensuring adequate food and water are in safe houses, having enough safe houses for people to be housed comfortably, and clearing areas to prevent malaria after the event.

The program took a whole of island and whole of community approach in Aniwa and Erromango, which sought to ensure the most vulnerable people

benefited equally. This transformed both disaster management and social inclusion from a family responsibility to a community one. The study found that CARE's programming led to greater coordination of community action before, during, and after the cyclone. Aniwa and Erromango communities worked together to prepare, respond, and recover from TC Pam, the CDCCC was respected and on their instruction, almost everyone moved to safe houses in a coordinated manner, at least 12 hours before TC Pam hit. In contrast, in the non-DRR communities, disaster preparation, response, and recovery was seen as an individual family responsibility, and action was not led or coordinated across the community. This included families themselves looking after vulnerable members, and cases of individual family members having to carry or escort multiple children or elderly people from house to house through the night, including during a storm surge.

Better preparation dramatically changed community experiences of TC Pam. As well as the differences in the checklist results between the communities where CARE had worked and those where they hadn't, the communities also shared with the field team their different feelings about the event. In Aniwa, for example, the communities were proud to talk about their experiences. They were keen to explain how they worked together and who took on which roles. They spoke constructively about things they could do to improve their response and were looking to the future. In Tanna, in contrast, it was at times an emotional experience for some people to revisit their experiences of TC Pam. Over a year later, people that engaged with the study showed the team that they still carried some trauma about the event and were keen to engage in CARE's new DRR program in their communities.

Having a trusted source of an early warning was important, and the communities in Erromango and Aniwa often cited that they trusted the CDCCCs and took their advice. The CDCCCs in each location went house to house to check on people in their preparation, and in Erromango, this sometimes meant travelling to outlying settlements. Their actions meant that the early warnings were being delivered by a trusted source, and the warnings were taken seriously. An additional community discussion in Imaio in Tanna was facilitated as part of the study (its data was not included for reasons discussed in the Methodology section), and the findings here further strengthened this observation. The Area Secretary lives in Imaio and he had participated in a CARE DRR training a few weeks prior to TC Pam. He reached out across the scattered settlements of Imaio to ensure they took some actions to prepare, and his advice was widely taken seriously. Although not coordinated or comprehensive, this community took more and earlier preparation actions than the other Tanna communities.

The benefit of the greater community coordination in Erromango and Aniwa extended into the relief and recovery stage, with distributions and community scale action more coordinated in Aniwa and Erromango than in Tanna. Interviews with national and provincial disaster management officials found that access to sound data in communities with an active CDCCC made the relief stage easier for them and more efficient. Although the CDCCCs had not been trained in relief processes beyond collection and sharing of assessment data, they all willingly took on this role, and the PDC and NDMO reported that the CDCCCs played a useful role in the relief stages. They were able to manage the distribution and data collection themselves, which freed up national and provincial government and NGO resources for other locations. In addition to efficiency, the CDCCCs in communities where CARE had worked in Erromango and Aniwa had strong engagement of women and women were represented on the distribution teams. Distributions were designed to be accessible for both women and men in these communities.

## Damage and loss

The communities that had DRR programming before Pam experienced less damage and loss than those that had not had DRR support, even when they experienced the comparable wind strength. While it is not possible to definitively say how much of this lower level of damage and loss was because of the preparatory actions taken by communities, it is likely that some of it is. The study found that CARE's gender responsive DRR programming contributed to reducing the damage from TC Pam and also on other losses such as fishing boats and household items.

Each of the communities in the study that CARE had worked with gathered detailed data on damage and loss that was disaggregated by gender, age, and disability. The data was gathered using NDMO forms that included household damage, community infrastructure, water, food, sanitation, and agriculture / livelihoods. Four of the six communities gathered this data within hours of the cyclone passing, and the other two completed the forms within two days. In contrast, it was several days before anyone in the Tanna communities gathered population totals, which were used for relief planning, and despite significant efforts to find community damage assessments that may have been done, these could not be found. The non-DRR communities on Tanna had received no training in how and when to gather such data and did not have these forms available, whereas the DRR communities did.

The communities in all three islands reported that the key variables in house damage were the design and age of houses. As well as the designated and strengthened safe houses facilitated by the DRR program in Aniwa and Erromango, well built, local style, triangle houses that had reinforced leaf roofs were more likely to have stayed up in Aniwa, Erromango, and Tanna. In Tanna, these were referred to as Tanna houses; in Aniwa, they were referred to as local houses. An example from Tanna and an example from Aniwa are included in Image 8 and Image 9 below. In years past, it had been common practice in each island to check and rebuild or



strengthen houses at the start of the cyclone season, but since a cyclone had not come to the area for many years, people had become complacent. The experience of TC Pam has refocused attention on this practice, and the communities on each island reported that they have already built, or plan to build, several local style houses to act as safe houses. However, the slow recovery of local materials required to build the houses, exacerbated by El Niño, has held them back.



*Image 7* A Tanna house in Imaio, Tanna, that withstood TC Pam



*Image 8* A local house in Ikaokao, Aniwa, that withstood TC Pam

## Recovery

The communities have all rebuilt homes, cleared the damage, and replanted crops, but recovery has been held back by other factors. The main reason is the El Niño drought, and in the Tanna, communities also experience volcanic ash fall. The impact of ash fall on crops, houses and wellbeing is poorly understood and warrants further study.

In the non-DRR communities the study visited, it was clear that recovery capacity exists at the community level. Communities in Tanna that had had no DRR support prior to TC Pam rated just 10% or less in all but the first community response stage of TC Pam. In the days immediately after the cyclone, households started to clean up and rebuild their shelters. The higher score of 41% at this stage is a result of their initiatives and this reflects their familiarity with disasters and early recovery actions.

## Gender and social inclusion

The study found that CARE's approach contributed to greater representation of women in community decision making, increased respect for women's roles in disasters, a higher incidence of women and men working together in the community, and the transformation of social inclusion from a household to a community responsibility.

One of the project's aims was to foster women's participation and decision making through the establishment of CDCCs with a gender balanced membership. CARE worked within the guidance of the NDMO in establishing the CDCCs and also required a gender balanced committee approach across the communities. Through CARE's work to establish a gender balanced CDCC and by providing gender training for all CDCC members, CARE contributed to increased respect for women's leadership in the CDCCs. The study found that in Aniwa and Erromango, women and men were supportive of women's leadership in disaster management, and women leaders and CDCC members felt respected and listened to.

Women's participation in the CDCCCs was both well respected and effective in the DRR communities. The study found that male and female community members expressed that women CDCCC members make important contributions to the committees. Women's representation on the CDCCC was found to bring different perspectives to the committee, and men and women played different but important roles through the event.

Female and male CDCCC members worked together in Aniwa and Erromango during the event to take appropriate action. At times, this meant shifting and changing roles to ensure actions were done. For example, as the cyclone hit, almost all people in Aniwa and Erromango were in safe houses, but the communities set up stand by teams to be alert through the night and check on the cyclone's progress outside. Women CDCCCs took on roles supporting people inside the safe houses, and passed their CDCCC vests to strong men to work with CDCCC men to do these patrols. During TC Pam, women and men shared roles and responsibilities. In particular, women took on new roles as needed during the alert that matched their capacities at the time, such as looking after people in safe houses and acting as focal points for information, while male CDCCCs and other young men took on a stand by role, looking out for danger.

The program took a whole of island approach in Aniwa and Erromango that sought to ensure the most vulnerable people benefited equally. Community linkages were reported as stronger than before the program, and the whole of island approach strengthened linkages between neighbouring communities, with disasters and safety now seen as a shared responsibility. The program also transformed both disaster management and social inclusion from a family responsibility to a community one. As a result of CARE's work, not only were vulnerable groups in the communities on Aniwa and Erromango seen as a whole of community responsibility, they were also given extra assistance as needed. In each Aniwa and Erromango community, they gave evidence of specific actions they took to seek out and support vulnerable groups. Help was asked for, offered, and given across all the stages of TC Pam.





## 6. RECOMMENDATIONS

*The following recommendations are offered in the spirit of increasing the resilience of vulnerable communities to disasters. The knowledge gained hopes to highlight the benefits of gender responsive DRR, and as such, to increase the strength of calls for more and continued DRR programming.*

### **Long term engagement in community based DRR linked to strengthening of provincial and national capacities works, and demands increased investment.**

The above findings are strongly in favour of increased investments – by governments, donors, and NGOs – in gender responsive DRR. The training and support from CARE was fresh in the minds of the communities in Aniwa and Erromango and the connections with CARE were strong. Effective DRR demands ongoing support and refresher training. CARE worked with these communities over a number of years and established robust community disaster preparedness, response, and recovery capacity. Short term or one off programs are not enough. An approach that focuses on continued training, capacity building, and gender equitable membership at the community and provincial government level, combined with strong linkages and national level coordination of disaster management, offers an effective and scalable model. As the Government of Vanuatu is currently adopting a national standard for community based DRR informed by the approaches of CARE and other Yumi Redi consortia partners, there is an opportunity for this model to have a significant and sustainable impact at a national level, if adequate support is provided to the Government to implement it at scale.

### **Empower trusted leaders in communities – both men and women.**

With ongoing training and support, men and women in the community, and in particular members of CDCCCs, are empowered with knowledge and skills to interpret the warning alerts, initiate appropriate response steps, and provide leadership to the community. This results in them being trusted and respected within their communities, their early warnings being taken seriously, and their response actions being followed by the whole community. There need to be active systems in place that are trusted by the communities so that warnings and preparedness steps are taken seriously and are acted upon. Ensuring gender balanced CDCCCs and supporting and empowering women to take on disaster management leadership roles ensures their voices are heard, and that men and women work together in the community to prepare and respond more appropriately and effectively.

### **Ensure gender equality and inclusiveness is at the centre of DRR programming.**

A focus on gender equality in DRR programming can empower women to take up new leadership roles in the community, bring new acceptance and respect from the community about the potential and value of women leaders, and ultimately makes DRR activities more effective in the face of a disaster because both men's and women's voices and roles are respected. Programs should, at a minimum, include ensuring gender balance on CDCCCs, empowering women to take leadership roles within the CDCCC, providing training on gender and inclusion for all CDCCC members and community leaders, and explicitly training CDCCC members on their roles and responsibilities relating to gender and social inclusion. Further, focusing on inclusiveness in DRR ensures that the community work together to ensure everyone in the community is prepared, protected, and supported in the event of a disaster, including making inclusion of more vulnerable people a community priority.



**Consider applying the research methodology more widely in Vanuatu, and potentially elsewhere.**

The research methodology used in this study could be applied beyond the work of CARE International in Vanuatu to delve more deeply into the impacts of such DRR work. CARE or other agencies could take this methodology to further expand the sector's knowledge of the impact of DRR programming. It could also potentially be applied in other contexts where a localised DRR Checklist, including context specific preparedness and response measures, could be developed. The findings here could also be tested after a few years, or indeed after another cyclone, to see how their efforts compare.

## ANNEXES

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# 1. DRR Checklist

## BLUE ALERT (24 HOURS BEFORE)

### Overall community activities

Preparation activities should start now

The whole community should listen to cyclone warnings on Radio Vanuatu

The whole community should follow the cyclone track on the tracking map

Look out for custom warning signs

Charge everything that needs power like mobile phones

Cut crops such as manioc and banana

Cut branches from trees close to your house

Secure things that can fly around in the wind including tin sheet roofs

Cover up the water supply and remove pipes connecting the water tank and the roof

Reinforce the roof with coconut leaves

Prepare your household items such as food, water, radio, batteries and torches

Work together as a community to help children and people with special needs to prepare

### CDCCCC

Listen and share information with the community

Make sure everyone is preparing well including securing the roof and cutting trees close

Help children and people with special needs

Make sure everyone is preparing well including preparing household items

### Women

Prepare your household items such as food, water, radio, batteries and torches

Cut crops such as manioc and banana

### Men

Cover up the water supply and remove pipes connecting the water tank and the roof

Cut branches from trees close to your house

Secure things that can fly around in the wind including tin sheet roofs

Reinforce the roof with coconut leaves

Help the CDCCC to organise young people to help children and people with special needs

### Youth

Help your parents to prepare useful things like food, water, radio, batteries and torches

Help your parents to secure the house

## YELLOW ALERT (12 HOURS BEFORE)

### Overall community activities

Every school must close

Check which houses are strong enough for the cyclone to be safe houses

Check everything is now ready such as food, water, radio, batteries and torches

Check everything is charged such as mobile phones

Continue to listen to Radio Vanuatu

Move to a safe house if your house is not strong

Cut crops such as manioc and banana

Cut branches from trees close to your house

If you have animals let the free

Finish your preparations and start to move everyone to a safe house

Make sure preparations of all children and people with special needs move to a safe

### CDCCCC

Move everyone whose house is not strong to a safe house

Make sure to check all children and people with special needs

Make sure there is enough food and water in the safe house

Continue to listen to Radio Vanuatu

### Women

Check everything is charged like mobile phones

Check everything is now ready such as food, water, radio, batteries and torches

Collect children from school

### Men

Check everything is now ready such as food, water, radio, batteries and torches

Collect children from school

Continue to listen to Radio Vanuatu

Move everyone to a safe house including children and people with special needs

### Youth

If you have animals let them go free



## RED ALERT (DURING THE EVENT)

### Overall community activities

Every government department, business and shop must close

You should have completed your preparation

Everyone should be inside a safe house

Continue to listen to Radio Vanuatu

Every workplace and service like hospitals must close

Stay healthy in safe houses for example sleep under a mosquito net or use a mosquito

A team of CDCCC members and some other strong men should stay alert during the cyclone

Count the number of people inside each safe house

Everyone should be inside a safe house

Make sure everyone inside the safe houses has enough food and water

### CDCCC

You should have completed your preparation

Count the people inside each safe house

A team of CDCCC members and some other strong men should stay alert during the cyclone to check on everything

Everyone should stay inside a safe house

Continue to listen to Radio Vanuatu

### Women

Continue to listen to Radio Vanuatu

Everyone should stay inside a safe house

### Men

Continue to listen to Radio Vanuatu

A team of CDCCC members and some other strong men should stay alert during the cyclone to check on everything

Everyone should stay inside a safe house

### Youth

Continue to listen to Radio Vanuatu

A team of CDCCC members and some other strong men should stay alert during the cyclone to check on everything

Everyone should stay inside a safe house

## IMMEDIATELY AFTER

### Overall community activities

Finish a first assessment form within 24 hours and send it to the Area Secretary and / or NDMO

Help anyone who is injured or dead

### CDCCCC

Finish a first assessment form within 24 hours and send it to the Area Secretary and / or NDMO

Help anyone who is injured or dead

### Women

Finish a first assessment form within 24 hours and send it to the Area Secretary and / or NDMO

### Men

Finish a first assessment form within 24 hours and send it to the Area Secretary and / or NDMO

### Youth

Finish a first assessment form within 24 hours and send it to the Area Secretary and / or NDMO

## COMMUNITY RESPONSE

### Overall community activities

Start to put things back to normal

Rebuild houses

Plant food crops and save food

Help people with special needs

Clean up around the house and community

Cut large trees that have fallen on houses or across roads

Clear up the area to stop spread of malaria

### CDCCCC

Check all houses, clear roads and fix houses

Advise the community to plant crops

Advise the community to cut large trees that have fallen on houses or across roads

Clear up the area to stop spread of malaria

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Provide relief supplies to the communities if the damage is large

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Organise men and young people to help children and people with special needs to recover

**Women**

Clean and sort the house and put wet things out to dry

**Men**

Cut big trees that have fallen on houses or across roads

Clear up the area to stop spread of malaria

Go to the garden to check food crops, build back houses with the help of young people

**Youth**

Cut big trees that have fallen on houses or across roads

Clear up the area to stop spread of malaria

Help parents to help children and people with special needs to build back their houses

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