

Residents' perception regarding household preparedness in areas prone to sudden natural hazards

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Abstract

The purpose of this case study was to investigate residents' perception regarding household preparedness in areas prone to sudden natural hazards. The study was conducted in Namacu, Koro Island, Fiji. The main method for data collection was through semi-structured interviews and observations. Many of the factors affecting perception regarding the residents' household preparedness were connected to values, earlier experience, lifestyle and needs. The residents' have shown a high ability to cope with disasters despite carrying out few mitigation and preparedness measures on a daily basis. The high ability to cope is affecting the villagers' willingness to prepare. Previous experience has increased risk and preparedness awareness, but few signs of an increased preparedness have been shown. The respondents believe that they have a better preparedness since witnessing earlier events, despite the recovering process after the most recent disaster being slow.

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Summary

The purpose of this thesis was to study and get an understanding of people's perception regarding household preparedness in areas prone to natural hazards. The scope of this report was to increase the understanding of what type of natural hazards the inhabitants prepare for, how they prepare, what motivates the inhabitants to improve their preparedness, accountability for managing disasters, and how previous disasters have changed their perception towards preparedness. The focus throughout the study has been on sudden natural hazards. The case study was conducted on the geographically remote Koro Island, Fiji.

The thesis has been carried out as a case study. Together with the case study approach, *grounded theory* has been used as a tool for conducting the study. The main method for data collection was through semi-structured interviews with the locals living in villages, mainly Namacu, on Koro Island. The data from the interviews were then analyzed and coded to create concepts and categories, which were used to identify trends that could be used to answer the research question.

Earlier experiences from hurricanes have led to an increased preparedness awareness towards these. However, the general awareness towards natural hazards other than hurricanes is unchanged and remains low among the villagers. Despite the increased awareness towards hurricanes, there are few physical measures being carried out on a daily basis. Also, most community members live in temporary houses. The respondents expressed that they are feeling more prepared to handle a disaster after experiencing earlier events. This perceived higher ability only seems to be connected to surviving during a natural disaster. The plans on how to continue life after a sudden natural hazard are few. The villagers clearly live "in the moment".

Respondents have expressed eagerness for getting training and information about preparedness. However, few people in the village showed up when the opportunity for training was given. A reoccurring phenomenon among the respondents was that they express how important it is to be prepared and that they should increase their preparedness level. Despite this, observations on-site show how their actual actions and measures are few and do not correspond to what they have revealed in the interviews.

The villagers clearly see themselves accountable for preparing and managing their households during a natural hazard. However, if necessary, they expect help and aid from the government and NGOs in the aftermath of a disaster. This would especially be the case if the farms on the island would be destroyed during an event. If the farms are intact after an event, the villagers have expressed a great ability to cope with the aftermath since they appreciate that they would be able to survive for several months using only the local food sources. The villagers hold radio stations and government officials accountable for making sure that the villagers receive warnings before an event. When a warning has been received, the villagers plan to start preparing food, water, and clothes.

The communities on Koro Island are still deeply affected by Tropical Cyclone Winston (TCW), which took place February 2016. This is confirmed by observations on site and from talking to villagers on the island. In that sense, Koro Island is unique compared to many other remote areas that are prone to natural hazards. However, this study has clearly shown how the concerns on the island were few before the devastating event and that the villagers' awareness regarding household preparedness tended to be lacking. Post the event; it is clear that the villagers' perception regarding risks and preparedness towards hurricanes have changed. This combined, indicates how the perception in similar places might be, both before and after a devastating event.

The researchers deem that it is valuable to increase the knowledge about people's perception towards preparedness against natural hazards. This as it makes it possible to grasp how dependent the inhabitants are on external help in case of a disaster, and what type of help they are expecting.

Furthermore, the increased knowledge about people's perception also makes it possible to identify which actions that can increase preparedness among residents.

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Table of Content

1	Introduction	1
2	Research Questions	2
3	Methodology	3
3.1	Case Study Approach	3
3.2	Field Study	3
3.2.1	Data Collection.....	4
3.3	Data Analysing.....	5
3.4	Conducted Interviews.....	6
3.5	The use of interpreter	8
3.6	Limitations	8
3.6.1	The use of interpreter.....	8
3.6.2	Biases and Personal Characteristics	9
3.6.3	Setup of Research.....	10
3.6.4	Applicability	11
4	Conceptual framework	12
4.1	Risk perception.....	12
4.2	Risk and hazard	12
4.3	Disaster and Rapid-onset events.....	12
4.4	Risk reduction	13
4.5	Preparedness.....	13
4.6	Vulnerability.....	14
5	Context Analysis	15
5.1	SIDS	15
5.2	Fiji	15
5.3	Koro Island.....	16
5.4	Tropical Cyclone Winston.....	17
6	Results	18
6.1	What kind of sudden natural hazards do the residents prepare for and how do they prepare?. 18	
6.2	How has previous disasters affected their perception towards natural hazards?.....	21
6.3	What motivates the households to improve their level of preparedness?.....	25
6.3.1	Training and information.....	25
6.3.2	Needs and values	26
6.4	What are people's perception towards accountability for preparedness?.....	26
6.4.1	Household Level.....	27
6.4.2	Community and Village Level	27
6.4.3	External Help, Government, NGOs etc.	28

6.5	Miscellaneous results	30
6.5.1	Koro Island compared to other places	30
6.5.2	Ability for evacuation.....	32
7	Discussion	34
7.1	Factors influencing perception of risk and preparedness	34
7.1.1	Previous experiences	34
7.1.2	Local knowledge	36
7.1.3	Values	36
7.1.4	Local consumption	36
7.1.5	Feeling safe compared to the rest of the world.....	37
7.1.6	Estimation of future natural hazards.....	38
7.1.7	Overestimating own ability	38
7.1.8	Perception influenced by time	39
7.1.9	Low active participation when training and information is given	40
7.1.10	Accountability	40
7.2	Signs of preparedness.....	42
7.3	Ability to cope and recover	44
7.4	Possible factors affecting outcomes of future hazards	45
7.4.1	Values and working locally increase possibility to evacuate if warning given	45
7.4.2	Low probability of early evacuation.....	45
8	Conclusion.....	47
9	Bibliography	49
10	Appendix A – Interview Guide	I
11	Appendix B – Images	III
12	Appendix C – Nvivo.....	VI

1 Introduction

This master thesis was written for MSc. in Risk Management and Safety Engineering at the Faculty of Engineering, Lund University. The thesis is focusing on household preparedness in areas prone to natural hazards. All of the data, including interviews with locals, was collected at Koro Island, Fiji.

It is highly important to maintain a high level of household preparedness in order to reduce the risk of damage in case of an emergency (Paton, 2003). Several actions can be done in order to improve the preparedness e.g., storing food and water and preparing a household emergency plan.

With the annual average of victims around the world, between the year 2004 and 2014, being 196.8 million, the challenges regarding disaster management are huge (Guha-Sapir, Hoyois, & Below, 2016). According to Climate Risk Index, which indicates a level of exposure and vulnerability to extreme events, Fiji is ranked number 27 of countries worldwide most affected by extreme weather conditions from 1996 to 2015 (Kreft et al., 2016). As such, there is a constant overhanging threat regarding natural hazards.

A recent event that struck Fiji was Tropical Cyclone Winston (TCW). The cyclone was devastating for most parts of the country. It was the most powerful storm on record south of the equator (Esler, 2016). One island that was especially affected by Tropical Cyclone Winston was Koro Island. A geographically remote island, where aid did not arrive until four days after the island was hit. The recovering phase after Tropical Cyclone Winston has been slow. This has led to a national conversation between Fijian people and the Government regarding aid distribution (Materka, 2016).

The devastating consequences of Tropical Cyclone Winston lead us to a vital question when considering preparedness towards future natural hazards: *What are residents' perception regarding household preparedness in areas prone to natural hazards?*

Even though this study has been carried out on Koro Island, Fiji, the ambition is that the results will be relevant, partially if not completely, to research that is related to similar areas around the world. It should be clarified that the study only reflects on socially constructed matters and not particularly on the natural hazards being present in the area.

2 Research Questions

The main research question is:

- *What are residents' perception regarding household preparedness in areas prone to sudden natural hazards?*

The main research question is divided into the following sub-questions:

1. *What kind of sudden natural hazards do the residents prepare for and how do they prepare?*
2. *What are people's perception towards accountability for preparedness?*
3. *What motivates the households to improve their level of preparedness?*
4. *How has previous disasters affected their perception towards natural hazards?*

3 Methodology

This section of the report includes a description of the methodology that has been used to gather and read data from the field, which has set the foundation to this report.

3.1 Case Study Approach

A case study approach has been used as the method in this thesis. This method has been chosen as it enables us to get a deeper understanding of a complex issue that has not yet been fully investigated (Soy, 1997). Yin (1984) defines the case study method as *an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used*.

Combined with the case study approach, grounded theory (GT) has been used as a tool and inspiration source for analysing the collected data, see section *Data Analysing*. Data collection and data analysis are done in an iterative process. This was preferable as it allow the researchers to adjust the questions during the field study as new facts and observations are discovered (Kohbacher, 2006). The final step of the approach is to make a conclusion based on the identified and collected data. See Figure 1 for an overview of the applied method.

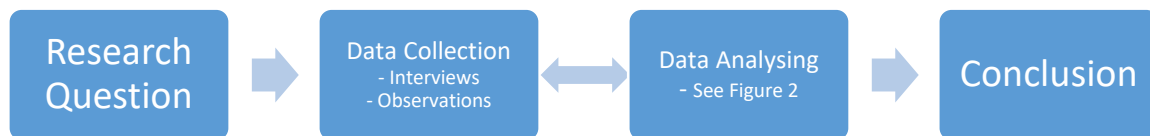


Figure 1. The process of the applied method.

3.2 Field Study

The case study was conducted on Koro Island, Fiji, see *Context Analysis* for further description of the area. This place was chosen after consultation with people with experiences from field work and knowledge about Fiji and Koro Islands.

Koro Island, as the rest of the Fijian Islands, is prone to sudden natural hazards such as earthquakes, tsunamis and especially powerful storms (Esler, 2016). These facts were highly valued when choosing location for conducting the study, in order to be able to answer the research questions. Further strengths of the location were that the researchers had formed contact with people in Fiji who were able to assist with contacting the former village headman and also provide proper local knowledge. To have an established contact with well-informed people with a wide social- and professional network was essential in order to be able to conduct the study on a geographically remote island on Fiji. This since it was desired to get approval from the chief of the village and help from a local contact to be able to get respondents who could participate in the interviews. Note that the snowball technique was applied when getting in touch with the contacts that were vital for being able to conduct this field study.

Together with the case study approach, grounded theory (GT) has been used as a tool and inspiration source for conducting the study. GT has been used as inspiration in the sense that it encourages the researcher to alternate between data collection and data analysis.

A simplified process of GT can be divided into two steps, collecting data and analyzing data. These two steps do not necessarily have to be in a linear order since the methodology allows for researchers to jump back and forth when any ideas occur to them (Charmaz, 2014). Theories do then evolve during the research while interplaying continuously between collecting and analyzing data (Strauss & Corbin, 1994). GT has similarities with the case study approach as its purpose is not to confirm an

existing theory. Its purpose is rather to develop explanations that suit the collected and analyzed data (Charmaz, 2014). During the study, the researchers have continuously analyzed data which have resulted in small changes in the interview process. The researchers have not had the purpose to confirm any existing theories. Instead, the focus has been on keeping an open mindset and describing the analyzed data.

3.2.1 Data Collection

Data has mainly been collected through interviews with people living on Koro Island who lives in the communities that have been visited. Among the interviewees were mostly farmers and housewives, but also teachers and village leaders. The dictum “all is data”, that was presented by Glaser and Strauss (1967), is characterizing the use of grounded theory that all data from every potential source should be noticed. Therefore, the collected data consists of interviews mainly but includes also observations done by the researchers on site. The researchers have also included information related to the subject that was brought up during conversations with the locals that took place outside of the interviews. By using these various sources, both formal and informal, the researchers expect to get a more honest and wider spectrum of the current situation and people’s perception towards the subject of investigation. These sources acted as sources of triangulation to confirm existing findings, but also enabling the researchers to get new insights. While walking around in the village, the interpreter provided the researchers with valuable information that enabled a deeper and wider understanding of the village and previous events.

A semi-structured interview method was used as the means of data collection. This method is suitable for two primary reasons. The main reason is that it allows for a conversation concerning perceptions and conception of the respondents regarding involved and emotional subjects. The approach is also adjustable and convenient for when the respondents have varied education, professions, responsibility etc. This means that the questions do not necessarily need to be asked in the same way between the respondents if it is ensured that the meaning is the same (Barriball & While, 1994). To give the respondents further freedom to answer the question as they wish, open-ended questions have been used (Neuman, 2016). By using semi-structured interviews, the researchers believe Alshenqeeti’s (2014) two key features of a qualitative interview are achievable: 1) a natural flow, and 2) rich in details. Two alternatives to *semi-structured* interviews are *structured*- and *unstructured* interviews. The choice of proceeding with *structured* interviews was deselected as the participants get limited in their response which will reduce the depth of the conversation. *Unstructured* interviews were also considered unsuitable as they usually are problematic to manage and quite time-consuming (Gill, Stewart, Treasure, & Chadwick, 2008).

Each interview began with informing the respondent about study details, ethical principles and a presentation of the researchers to create a proper atmosphere that increases the likelihood of honesty and openness. The first questions during each interview were questions that were easy to answer, in order to make the respondent feel more comfortable. When the respondent seemed to be relaxed, the researcher proceeded to more sensitive and complex questions. This strategy can make respondent feel more relaxed, build up a trustworthiness towards the researcher, which will yield valid data (Gill et al., 2008)

Since many of the respondents previously have experienced disasters, the interviews have been conducted with the utmost empathy and caution regarding the well-being of the respondent.

Interviews and the collection of data were carried on until the data became repeated and fitted into the already produced patterns. When using GT fully, aiming for *theoretical saturation* is what every researcher should do (Charmaz, 2006). The aim of this case study has been the same. When the interviews had been recorded and completed, they were all transcribed (word by word) to enable proceeding with analyzing the data through NVivo.

The Interview Guide that has been used is shown in Appendix A and examples of the collected and analyzed data from the interviews is presented in Appendix C.

3.3 Data Analysing

The purpose of analyzing data is to systematically organize, integrate and examine the collected data as we search for patterns among these (Neuman, 2016). This has been done by generalizing and connecting details to concepts to improve our understanding and evolve conclusions.

Analysing data is vital to building theories from case studies, but it is the hardest and the least codified part of the method (Eisenhardt, 1989). Therefore, the analysis process of the collected data in this case study is inspired by Grounded Theory. The analysis process of grounded theory has been chosen as it is suitable when analysing large amount of data while the researchers stay open-minded towards new explanations. Case studies (Soy, 1997) and grounded theory (Charmaz, 2014) are similar as the intentions are to evolve a deeper understanding, based on the collected data of a certain phenomenon. Also, instead of using a hypothesis and seeking an explanation to the collected and analysed data in an existing theory, the aim for this case study has been to make conclusions that represent the collected and analysed data. Therefore, “Grounded Theory” has been used as a tool for data analysing in this case study approach. This includes developing codes and categories in order to identify trends from the collected data.

The analytical process defines the collected data and makes an analytic interpretation of these. The Grounded Theory analysing process consists of two main phases where coding is done: *initial-* and *focused coding*. During the initial coding, the first phase of analysing, the researcher shall name every single word, sentence or segment of data. This stage is done properly by being short and precise, staying close to the data, not trying to interpret data, compare data with data and having an open mind to all possible theoretical direction (Charmaz, 2006). However, when the researchers found paragraphs that was obviously related to a certain sub-research question, the paragraph was coded into the relevant category without being initial- and focused coded before. This was done as the ambition was not to strictly follow the Ground Theory approach, the Grounded Theory approach has only been used as an inspiring tool for the analysing process.

Focused coding, the second phase, serves the purpose to sort, and make concepts of large amount of data that was noticed during the initial phase and establish the suitability of those. However, the process is not linear and there are advantages to repeating some initial coding after doing focused coding. By doing so, Charmaz (2006) means that data from the respondents that have been studied earlier will make more sense when jumping back and forth between initial- and focused study.

When the initial- and focused coding is completed, and concepts have been identified, the target is to create categories that correspond with the identified concepts that are of similar nature. Lastly, trends are identified of the produced categories, to which explaining theories are evolved.

The researchers initiated the analyzing process after the first interview had been completed. The analyzing process was active in parallel with the data collection. This allows the researchers to adjust the questions during the field study as new facts and observations are discovered (Kohlbacher, 2006). During the analyzing process, and in line with Soy (1997), the researcher had an open mind towards find new insights and a deeper understanding.

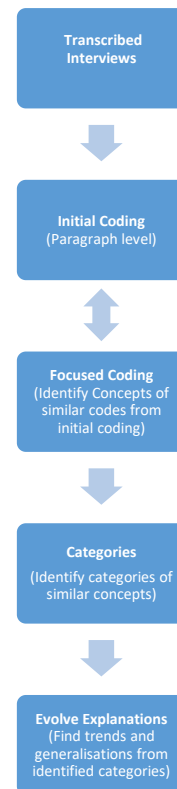


Figure 2. The starting point of the process when analysing data.

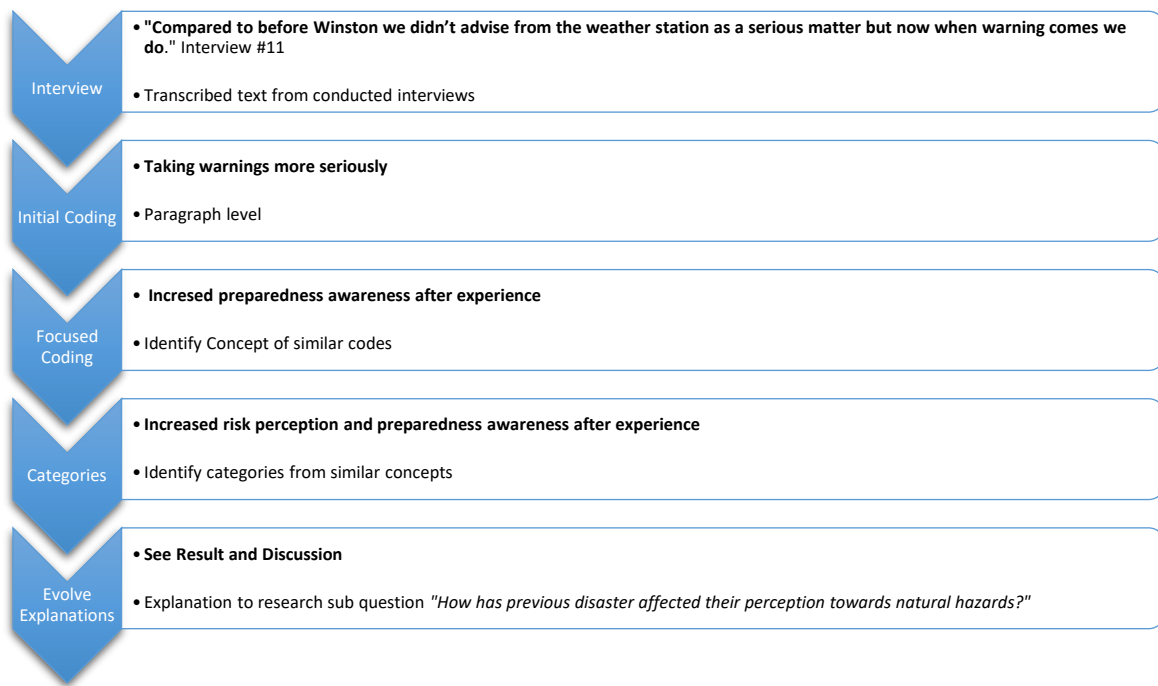


Figure 3: An example showing the process from interviews to evolving explanations for a research sub question

The final goal of the coding was to first find explanations that matched the sub-questions. All other data was also coded and analyzed to find other trends. The trends that were not related to the research questions were sorted and categorized in order to investigate other aspects of interests. By doing so, the researcher kept an open mind to find other aspects of interest throughout the process of completing the study. Refer to “Miscellaneous results” for other aspects of interest that was not directly connected to the sub-questions. These aspects have also been taking into consideration and are discussed in Chapter 7.

3.4 Conducted Interviews

The interviews that were used as the basis for this case study were conducted between the 31st October and 8th November 2017. The majority of the interviews were conducted with people from Namacu village on Koro Island, Fiji. A total of 27 interviews were conducted. Out of the respondents, 8 were females and 19 were males. Most of the interviews were conducted in local residents' houses. Figure 4 visualises the distribution of residents interviewed within each age group. It became clear that the males more often than the females responsible for the household. The researchers requested to get a wide spectrum of respondents from different age groups in order to not missing out on any variety in perception and experiences regarding the subject of research.

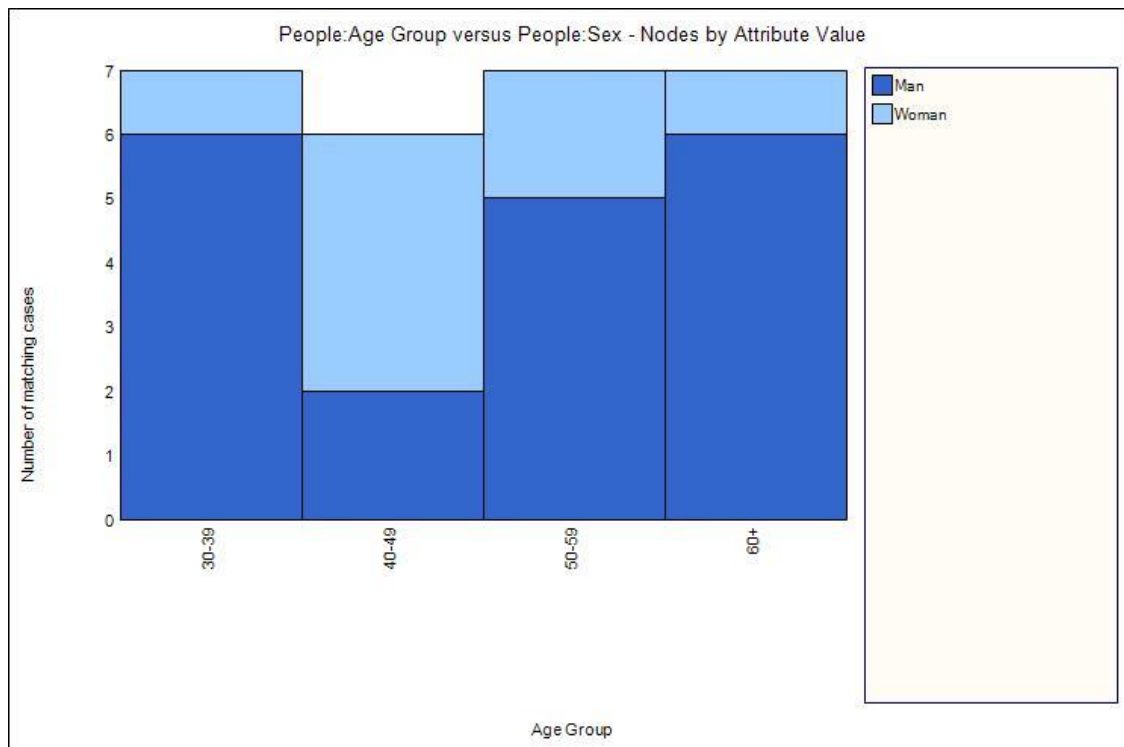


Figure 4: Distribution of age and sex of respondents

Figure 5 shows the type of occupation the respondents considers themselves to have.

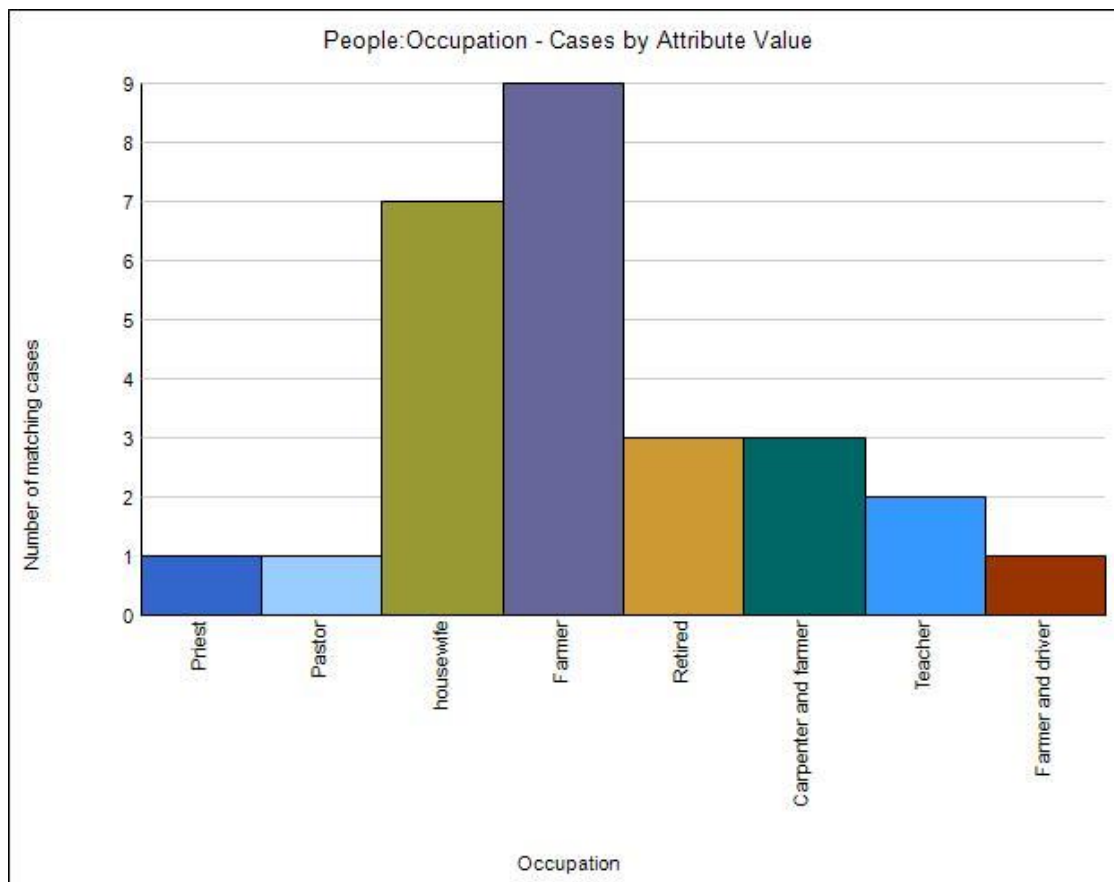


Figure 5: Type of occupation among the respondents.

The most common set-up of a household is that the husband is a farmer, the wife is a housewife and the kids are in school. The occupation of the respondents corresponds well to the distribution in the village and the island. The priest and pastors are on a 5-year term in one specific village before they go to another village.

3.5 The use of interpreter

The interviews were conducted together with an interpreter that was fluent in Fijian and had limited working proficiency skills in English. The use of an interpreter was essential in some interviews as some of the respondents spoke Fijian and no or very little English. When the respondent felt comfortable with speaking English, the interpreter sat along and translated when necessary. Approximately half of all the interviews were conducted without having the interpreter translating most of the conversation. The interpreter was provided through the contacts at The University of South Pacific. The interpreter had excellent local knowledge and provided the researchers with valuable information about the area and cultural procedures, which came to be essential for being able to conduct the interviews properly. The interpreter was the village headman until recently and was appreciated by the other villagers.

3.6 Limitations

This section consists of identified sources of error that might affect the legitimacy of the presented results and conclusions in various ways. From the beginning of the field study until the end of the analysing process, the researchers have evaluated the reliability of each step. This has been done in order to identify anything that can influence the quality of this report. The researchers deem it impossible to create a similar study without having any sources of error. However, it has been highly valued by the researchers to identify possible sources of error and take them into consideration when finalizing the report. Read below for evaluation of the identified sources of error and elaborations for how they possibly affect the reliability of the outcome.

3.6.1 The use of interpreter

None of the researchers had any previous experiences of conducting interviews with the help of an interpreter. The interpreter had no earlier experience of being a translator in a comparable situation. This combined can have affected the quality of the first interviews. However, over time the quality of the interviews became higher since the researchers and the interpreter got to know each other better. One of the weaknesses of using an interpreter is that it becomes difficult for the researcher to notice all details. This can lead to loss of valued data which can contribute to a lack of additional depth of each interview. The researcher also gets dependent and limited by the interpreter which aggravate the researcher from steering the interview in a smooth way towards the desired subject.

During some interviews, the respondents did not understand the question when it was asked at first. This forced the researchers to clarify the question further by giving some examples to make it clear to the respondent what the question was about. After explaining the question further, by giving examples, the respondent replied with the same examples as was used to clarify the questions. This was noted and was later taken into consideration during the analysing process when deciding if the data would be included during the analysing process.

The respondent replied occasionally with an answer that went on for approximately 20 seconds. While the answer from the respondent took 20 seconds, the answer that was forwarded by the interpreter lasted only for approximately 5 seconds. The same thing happened the other way around. The respondent spoke for about 5 seconds while the translator spoke for about 20 seconds. It also became obvious after some interviews that occasionally the interpreter tended to use the same phrases when translating the respondent's answer to a certain question. This kind of interpretations happened occasionally and is considered as a limitation in level of details that were registered by the researcher. This particular limitation could have been avoided by using a questionnaire or structured interviews. However, other limitations and disadvantages, such as steering the conversation towards certain topics

and affecting the respondent ability to answer freely, would occur by doing so. The researchers took these pros and cons into consideration when choosing procedure of collecting data.

It should be highlighted that the interpreter himself early in the interview process highlighted a need for an evacuation centre. However, from analysing the results, there are no signs showing that evacuation centre is being mentioned more frequently as a need missing when comparing translated interviews to non-translated interviews.

The interpreter together with most of the respondents has spent almost their entire lives in Namacu, Koro. Due to this, the interpreter and the respondents knew each other well. It is possible that their relationship affected the respondents' answers as they could not be completely honest as McKinnon (1988) mentions. However, the researchers got the impression that the respondents and the interpreter had a trustworthy and relaxing relationship that was beneficial for the interviews.

3.6.2 Biases and Personal Characteristics

Glaser and Strauss (1967) highlighted the importance of that the researcher in field must not affect the emerging data. This since the data is supposed to be unbiased observations that reflects an objective reality. However, the researchers along with Charmaz (2014) opine that neither data nor theories can be completely unbiased, as researchers have varied experiences and prejudice, even if we admit it or not, that will affect our observations out in the field. Based on the above, we believe it is appropriate to acknowledge that every researcher is subjective to some extent while doing observations. This is especially relevant in this specific study as the researchers have no previous experience of similar field-studies. To consider this interpretative portrayal we suggest that researchers should be aware of these biases and try to minimize these and considering them as a possible source of error. McKinnon (1988) mentions an *observer-caused effect* that is referring to how respondents are affected by the observer (researcher) who conduct the interviews. However, this source of error is inevitable when having a dialog as the presense of the researcher will make the respondents change their behaviour. This source of error has been acknowledged and evaluated during and after the interviews.

When conducting some interviews, the researchers and the respondents had no prior relationship with each other. This was especially the case during the first interviews since the researchers were new in the village and were still unfamiliar faces to the villagers. During the later interviews, the researchers and some of the respondents had an existing relationship as the researchers had spent several days in the village and had interacted with the villagers. How the various relations between the researchers and the respondents affected the quality of the interviews is difficult to know. When the respondent and researchers do not have a prior relationship, it can be argued that the interview is perceived as more formal and anonymous. This can have a positive effect in the sense that the respondent perceives it easier to be honest and does not feel accountable or "ashamed" for sensitive details. However, the respondents can also experience it easier to talk about sensitive details if they know the researcher on a personal level. In this particular study, the researchers argue that the interviews with respondents who had formed a relationship with the researchers gave deeper details and information.

During the interviews, the researchers experienced that some of the respondents were very brief in their answers, even though the question was wide and open. This was especially common when the respondent had limited English language skills and the interview had to be translated by the interpreter. During these interviews, the researchers asked follow-up questions in order to get a deeper understanding of the respondent's perception. When the follow-up questions did not generate further explanations, but rather a disturbing feeling among the respondent, the researchers adjusted their questions to be more suitable for the specific respondent. This was noted and then taken into consideration when analysing and coding the specific interview. Usually, when coding interviews like these, some answers were excluded during the analysing process as the researchers perceived some answers to be ignorant and not reflecting the respondent's true opinion. This was done as the aim was to gather a perception that is as honest as possible. Therefore, any answers that were perceived as

ignorant, were ignored during the analysing process. This was also done when the respondent did not seem to understand the question and just replied with repeating what the researcher said.

It shall be noted that the respondents can perceive the questions and terms differently from how the researchers perceive them. This was something that the researchers had observed and noted during some early interviews and that was viewed as a source of error. This was highlighted and confirmed during interview #26, see below, by a respondent who was perceived as well educated and more analytic than the average respondent.

Interviewee: Do other people in the village know about this? When we've been speaking to people, not many people told us this.

Respondent: Most people don't understand what you are asking about but almost all of the houses have plans.

Interview #26 (Male, farmer)

During the interview, he mentioned that the villagers did not really understand some of the questions they were given. The researchers clarified for the respondents in the beginning of the interviews that if the respondent did not understand the question, he/she should just ask the researcher to clarify the question. However, the respondents may have avoided asking for clarifications since it can be connected with shame or lack of knowledge.

3.6.3 Setup of Research

The researchers deemed that it was unsuitable to evolve a complete theory from the conducted case study. The goal was instead to identify trends and to generate a conclusion that represented the collected and analysed data. Eisenhardt (1989) mentions that a strength of building theories from a case study is that the theory is likely to be empirically valid as the development of the theory is strictly connected with the collected data. When evolving explanations for the research sub-questions, only the categories that were related to the sub-questions were chosen. This was done as the conclusions would have been at risk of being overly complex if all the collected data should have been covered when evaluating each sub-question. However, Eisenhardt (1989) also argues for the importance of not having a too narrow explanation that fails to explain the observed phenomenon on elevated level enough of generality. Therefore, it is vital to find a good balance between covering the rich details within the collected data and having a simplicity in the theory that provides a good overall perspective. This has been considered when identifying trends and generalisations and thereafter creating the conclusion to the different sub-questions that are expected to provide knowledge about the main research question.

The researchers acknowledge the limitation with trying to explain the main research question with the chosen four sub-questions. However, this approach was chosen for the case study as it seemed necessary to divide and simplify the main research questions due to its' complexity. The use of sub-questions was also made in order to make it clearer for the researchers, but also for future readers of this case study, to follow and grasp the layout of the study. A possible limitation using the chosen sub-questions, that are supposed to represent the main research question, is that there are some aspects that can be lost. Even though the sub research questions were picked before the study was carried out, the researchers made an effort of having an open mind for other aspects during the collection and analysing of the data. The use of the chosen sub-questions can be seen as a subjective choice by the researcher as it is possible that other sub-questions would have been chosen if the study was carried out by different researchers. However, the chosen sub-questions were approved together with supervisor and is deemed as suitable sub-questions for the main research question.

3.6.4 Applicability

The purpose of this study was to investigate residents' perception towards household preparedness in areas prone to sudden natural hazards. The results and conclusions given in this particular report are based on the conducted field study on Koro Island, Fiji. Whether the conclusions presented in this report are applicable or not to other similar areas can be discussed. It should be noted that Koro Island suffered severe damages from Tropical Cyclone Winston in early 2016. It is obvious that the people on Koro Island are still scared from the event, and it can be assumed that the respondents are still traumatized from the TCW. Therefore, it is likely that the results from a field study on Koro Island can differ from results from similar field studies executed in other areas that are prone to sudden natural hazards but which has not been impacted by an equivalent disaster in the past few years. Also, the residents' trust towards experts and authorities is likely to vary between different areas and countries. The researchers are of the understanding that each area is unique in diverse ways as norms, culture, and experiences may differ. Moreover, the researchers deem that residents with limited resources in areas being prone to natural hazards experience similar struggles of how preparedness should be prioritized.

Even though this field study was conducted in an area that is still deeply affected by the damages of an earlier natural hazard, it is clear how the villagers' perception towards household preparedness was prior to the event. Moreover, it has been shown that the people's awareness towards risk and preparedness tended to be lacking before the devastating event. Therefore, it can be argued that the results in this study are applicable to a certain extent for areas prone to natural hazards which have a similar demography-wise as Koro Island and where there has not been a traumatizing event in the recent past. The researchers also assume that this study can give an indicator of how people's perception towards household preparedness will change after a destructive event similar to TCW.

It shall be noted that the norms and culture on Koro Island are likely to affect the results of this study. The villagers can, from a western perspective, be perceived as a relaxed people were there are no major concerns and no rush with rebuilding the village. The researchers are of the opinion that these characteristics have played a significant part in the rate of recovery for the villages after TCW. Therefore, the results of the respondents' perception can be argued to be inapplicable for other similar areas where the locals do not necessarily have to be of similar characteristics as the respondents in this study.

4 Conceptual framework

4.1 Risk perception

In order to be able to understand what motivates household preparedness, it is important to understand how aware people are about risks connected to natural hazards. Why people fear the things they do is called risk perception. In general, people tend to ignore hazards they do not perceive (Coppola, 2011). It is clear that both the perception and the awareness regarding natural hazards vary among individuals.

If people perceive risks correctly, they can prepare better. As such, if people's perception towards risks is exaggerated one might expect their preparedness level to be higher. However, studies conducted have shown different outcomes regarding the interaction between risk perception and preparedness. Some studies show a relationship while others do not (Donahue et al, 2013).

4.2 Risk and hazard

Different authors have different definitions of risk. Nevertheless, when discussing risk, the terms likelihood and consequence are often being mentioned. Renn & Walker (2008) defines risk as, "an uncertain consequence of an event or an activity with respect to something that human's value". This is a definition that the writers agree with. However, Coppola (2011) has a similar definition being, "the interaction of a hazard's consequences with its probability or likelihood". What can be seen from Coppola's (2011) definition is that he more clearly mentions likelihood, which is something the researchers also consider when defining risk. Coppola (2011) also highlights that there are three factors which are examined when determining the consequences of a disaster. These are deaths/fatalities, injuries, and damages (reported in currency). From Coppola's (2011) definition it is clear that consequences often relate to negative outcomes.

Another term often being used when discussing risk is the concept of hazard. Hazard is the potential for harm or other consequences of interest (Renn & Walker, 2008). It is not to be confused with risk as hazard is just an event that can cause harm, it does not take likelihood into account.

In this study, risk will be seen as the interaction of a hazard's negative consequence regarding what human's value with its likelihood.

This study will focus on groups that are living in areas which are prone to natural hazards and where earlier events have resulted in severe negative consequences, especially property damages.

4.3 Disaster and Rapid-onset events

Different sources give different explanations to what a disaster is. Centre for Research on the Epidemiology of Disaster (CRED) defines a disaster as:

A situation or event which overwhelms local capacity, necessitating a request to a national or international level for external assistance; an unforeseen and often sudden event that causes great damage, destruction and human suffering (Guha-Sapir, Hoyois, & Below, 2016, p.7)

The definition used by CRED is the definition that will be used throughout the study. In their definition of disaster CRED talk about sudden events. Events whose occurrence cannot be foreseen far in advance are seen as rapid-onset events. For sudden events, the warning signs can be seen either a few seconds before an event occurs or days before an event occurs. Such events can be earthquakes, storms, cyclones, landslides or floods. When conducting the study, the focus has been on rapid-onset events. As the study has been focusing on household preparedness, both sudden-man made events and natural events have been covered. An example of sudden-man made events is landslides as they can be caused by humans who have overcut the forest which has caused landslides as the roots fail to bind the earth. Wars or armed conflicts etc. are not included in man-made events. However, it should be highlighted that even if the inhabitants of Koro are aware that they live in an area which is prone to

natural hazards, this study looks at the hazards as sudden-onset events. Nobody knows exactly when an event will occur. For example, it is considered impossible for the inhabitants to know exactly what day a cyclone will hit the island six months in advance.

Contradictory to rapid-onset events are slow-onset events, such as droughts or a slowly rising sea level. For these types of events, it can take years until a disastrous state is reached. These events will not be considered when conducting the study as people will be aware of the upcoming danger long before a disastrous stage is reached. Even if the study is focusing on people living in geographically remote locations, evacuation and external help are expected to be present in case of slow-onset event.

In this paper, the meaning of hurricane, tropical cyclone and cyclone has been the same. The terms have been used differently due to variations in literature and terms used by the respondents.

4.4 Risk reduction

Disaster risk reduction can be seen as the development and implementation of four different types of activities or functions. These are mitigation, preparedness, response and recovery (Perry & Lindell, 2003). Each activity being shortly explained below.

Mitigation - Focuses on efforts being done to reduce the likelihood or consequence of a hazard. Mitigation actions can be divided into Structural mitigation (relocation, building codes etc.) and Nonstructural mitigation (early warning system, education programs etc.).

Disaster preparedness - Actions taken in advance of a disaster in order to have a good response when disaster strikes. Preparedness can be seen as the state of capacity or readiness to deal with a disaster. Disaster preparedness is being done in order to prevent last-minute actions when disaster is about to strike.

Response – Actions being conducted when a hazard is imminent until the emergency is over. Actions are aimed at limiting negative consequences such as life losses and damage.

Recovery – Actions being done to repair and reconstruct what has been lost or damaged during the disaster. Recovery actions are being conducted once the emergency is declared to be over (Coppola, 2011).

4.5 Preparedness

Disaster preparedness is about knowing what to do, how to do it, and be equipped with the right tools to do it (Coppola, 2011). When it comes to preparedness, different recipients need to be considered. One group of recipients being governmental authorities. The other group is the public. Actions taken by a citizen to help themselves or someone else can be seen as public preparedness. During a disaster, government and organization resources will be stretched to the limit which means that it is important that the public is able to provide for their own needs (Coppola, 2011). The researchers believe that Donahue et al. (2014) summarise the importance and challenges of preparedness in an accurate way stating:

“One of government’s primary responsibilities is to ensure the safety and security of its citizens. This presents a policy challenge, since communities face multiple, complex hazards, illustrated by the present economic crisis, the continuing threat of terrorism, and the prevalence of major natural disasters. Likewise, citizens share responsibility for their own protection, by taking protective actions and avoiding the harms that may befall them. The more prepared people are, the less harm they will suffer when disaster strikes.”

Needs that often are being discussed when talking about household preparedness are water, food, heat, sleep, and safety. They all can be described as needs which are essential for every human in order to function (Civilförsvärsförbundet, 2017). There are several actions that can be done in order to increase preparedness among individuals and households such as stockpiling and establishing designated

meeting places. These actions and urgent needs have been the main focus, but also mitigation measures are considered in this study.

A way for governmental authorities to increase household preparedness is by providing educational programs and emergency training. However, studies have shown that campaigns like these sometimes fail (Hoffmann & Muttarak, 2017). When talking about preparedness, it is important to underline that preparedness is a constantly ongoing process (Perry & Lindell, 2003). Some determinants resulting in increased household preparedness mentioned by Hoffmann & Muttarak (2017) are:

- Being married and children in the home
- Having a high income
- Owning property
- Having local knowledge

4.6 Vulnerability

Coppola (2011) defines vulnerability as “a measure of the propensity of an object, area, individual, group community, country, or other entity to incur the consequences of a hazard.”. It is a complex concept but Wamsler (2014) has given three factors influencing vulnerability being, exposure, sensitivity and adaptive capacity related to how a target can withstand harm. However, as stated by Coppola (2011) it is important to understand that there is a clear difference between exposure and vulnerability. Just because an object is exposed to a hazard does not mean that it is vulnerable. As such, vulnerability is highly subjective and depending on preconditions. The same type of natural event, happening in two separate places can lead to completely different outcomes depending on how vulnerable individuals and communities are. In one place flooding might be seen as beneficial and in another place, it can be seen as a disaster.

The researchers agree with Coppola’s (2011) description of vulnerability, cited above. However as mentioned by (Adger, 2006) it is important to understand that vulnerability is a dynamic process and that the level of vulnerability can differ over time due to local conditions.

There are many factors that can increase vulnerability in a community, some being listed below (Enander, 2008):

Location and economy factors:

- Geographical isolation
- Low level of self-sufficient
- Weak economy prior to the event
- Low degree of mobility

Social structure factors:

- Isolated groups within the community
- Low level of social unity
- Dispersed families

Political and authority related factors

- Inequality
- Conflicts in the community

Risk related factors:

- Low degree of risk awareness
- Low degree of emergency preparedness

5 Context Analysis

5.1 SIDS

SIDS stands for *Small Island Developing States*. SIDS can be seen as developing countries which are facing specific, social, economic, and environmental vulnerabilities. Some vulnerability factors SIDS are facing are listed below:

- Remoteness from markets
- Small size
- Narrow resources and export base
- High costs for energy, infrastructure and communication
- Potentially expose to more frequent and intense natural hazards

Fiji is according to the UN classified as being a SIDS (UN-OHRLLS, 2015). At United Nations conferences SIDS have been seen as “special cases”, island countries which are facing frightening barriers when trying to meet their sustainable development goals. In 2014, The Third International Conference on SIDS was held in Apia, Samoa. At the homepage for the conference, it was stated that the difficulties SIDS are facing are particularly severe and complex.

5.2 Fiji

Fiji consists of an archipelago of more than 300 islands (Esler, 2016). About 100 of these islands are inhabited with the total numbers of inhabitants being just below 1 million. Fiji’s two biggest islands are Viti Levu and Vanua Levu. See Figure 6 for an overview of Fiji where Viti Levu and Vanua levu is mainly shown. The capital is called Suva and is located on Viti Levu. About 50 % of the population lives in urban areas. The population can be divided into two groups, native Fijian, who are Melanesians (57 %) and Indo-Fijians (38 %), who are descendants Indians (Nationalencyklopedin, 2017). Many Melanesians live in villages which are being led by a village headman, a so-called “turaga-ni-koro”. Most of the Melanesian population are today Christians and most of the descendant Indians are Hindu. After the impendence from the British in 1970, there has been a lot of political tension involving four big coups. This has led to great harm to the Fijian economy and during the 21st century, thousands of descendant Indians have fled the country (BBC News, 2015).



Figure 6: An overview of the Fiji islands. Main island (Viti Levu) located southwest of Koro Island (Google, 2017).

Large parts of the Fijian economy are based on tourism and agriculture, with sugar being the most exported product. Despite being one of the wealthiest countries in the Pacific, 44 % of the rural population live below the basic needs poverty line.

Fiji is located in the tropical cyclone belt and is prone to natural hazards such as heavy rainfalls and powerful storms. Additionally, the islands are surrounded by the Pacific Ring of Fire, which is associated with major seismic- and volcanic activity, powerful earthquakes, and tsunamis. The country is experiencing on average one cyclone per year. Moreover, Fiji is affected by climate changes such as sea-level rises, extreme temperatures and droughts (Esler, 2016). All this together makes Fiji a country that is highly exposed to natural hazards, which puts a lot of pressure on the inhabitants. According to Climate Risk Index, which indicates a level of exposure and vulnerability to extreme events, Fiji ranked number 27 of countries worldwide most affected by extreme weather conditions from 1996 to 2015 (Kreft et al., 2016).

5.3 Koro Island

Koro Island, where the study was conducted, is the seventh largest island in Fiji with a population of approximately 4500 people. The island is located 140 kilometres from Suva and is geographically remote from the bigger islands. A trip from Suva to Koro Island takes about twelve hours by ferry. Every Tuesday morning the ferry from Suva arrives to Koro Island and it leaves again late Tuesday evening.

Koro Island, part of the Lomaiviti Group of Fiji, can be considered as Tropical Cyclone Winston's Ground Zero as approximately 1000 houses were shattered on the island (OCHA, 2016). Figure 7 shows the location of Koro Island compared to the path of Tropical Cyclone Winston. The recovery phase after Tropical Cyclone Winston has been slow. This has led to a national conversation between Fijian people and the Government regarding aid distribution being called for (Materka, 2016).

This case study was mainly conducted in the Namacu village which is located on the east coast of Koro Island. It is estimated that there are about 100 households in Namacu that accommodates approximately 250-300 people. The most common family set-up is that the husband is a farmer and responsible for providing for the household, while the housewife is at home managing the house and prepares food. Namacu along with the rest of the villages on the east coast of Koro suffered more severe damages during TCW compared to the villages located on the west coast of the island. The fact that Koro Island can be considered as Ground Zero for TCW, and that the east coast of the island suffered the most, means that Namacu was among the villages that faced the most destructive conditions during TCW. Almost two years after the devastating event, it is impossible not to notice that the people on the island are still very affected by the tropical cyclone and that the recovery phase is years from being completed.

5.4 Tropical Cyclone Winston

In the beginning of 2016, Fiji was hit by Tropical Cyclone Winston. TCW destructed Fiji to an extent that is far worse than any previous event (The National Disaster Management Office (NDMO), 2016). TCW is the most powerful storm on record south of the equator. The cyclone immediately forced the government of Fiji to declare a state of natural disaster in all four Divisions of Fiji. A post-disaster assessment has confirmed that the storm caused damages and destruction for approximately 540 000 people, 62% of the nation's population and 80% of the population lost power (Esler, 2016). More than half a year after TCW hit Fiji, people on the remote island of Koro Island were still waiting on construction material in order to rebuild their homes (Materka, 2016). The big numbers of victims and the event of Tropical Cyclone Winston clearly show the need for preparedness towards disaster.

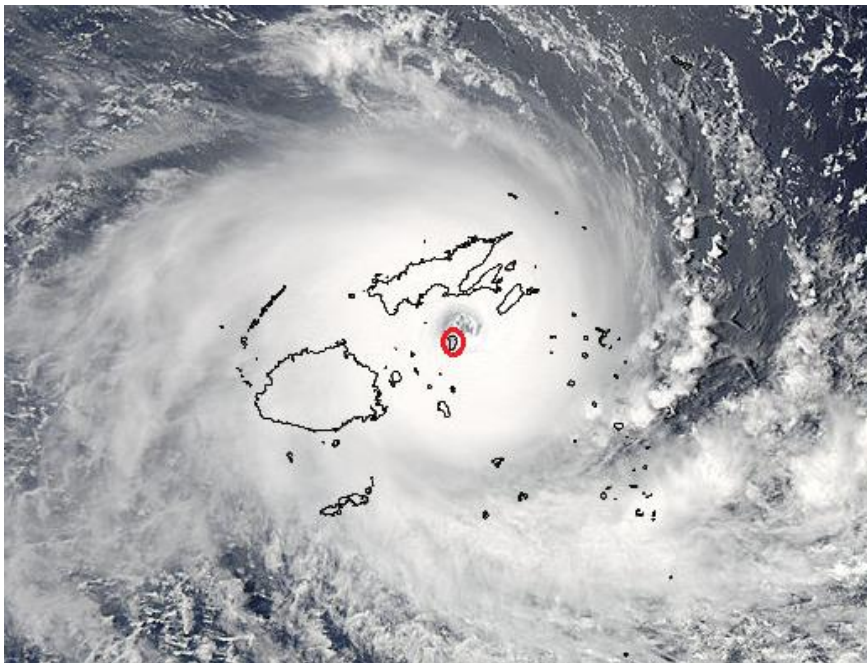


Figure 7: Showing when Koro Island is in the eye of cyclone Winston (NASA, 2016)

6 Results

The following section will present findings to answer both the main research question and the sub-questions presented in Chapter 2.

Main question:

What are residents' perception regarding household preparedness in areas prone to sudden natural hazards?

Sub-questions:

1. *What kind of sudden natural hazards do the residents prepare for and how do they prepare?*
2. *What are people's perception towards accountability for preparedness?*
3. *What motivates the households to improve their level of preparedness?*
4. *How has previous disasters affected their perception towards natural hazards?*

The findings will be presented, and the sub-questions will be answered in the following sections and then discussed in the following chapter. By linking the sub-questions together, the main research question can be answered. This chapter will also show findings that are not directly related to the sub-questions but that are considered to be useful to answer the main research question.

The results that are presented in this chapter are mostly on concept and category level. As earlier explained in Chapter 3.3, initial coding was conducted at an early stage but in order to show significant results, only concepts and categories are visualised. For a better overview of the coding process in NVivo, see Appendix C. The results shown in this chapter reflects upon the answers given by the respondents. Only noteworthy nodes and categories have been used in order to answer the sub-questions and to highlight important results. That means that not all of the results are shown in this chapter. As an example when answering sub-question number 1: “*What kind of sudden natural hazards do the residents' prepare for and how do they prepare?*” 192 references have been used. Throughout this chapter, quotes are presented in order to give the reader a greater understanding of the data.

6.1 What kind of sudden natural hazards do the residents prepare for and how do they prepare?

After the coding process, four different categories that emerged out of the coding process were used for answering the first sub-question. These categories were named “Type of hazards that is a concern”, “Preparation measures in everyday life”, “Preparation measures when warning is given” and “Time to cope for household”.

In the category “Type of hazard that is a concern”, the most frequently mentioned hazard by the respondents during the interviews was hurricane. Figure 8 shows the number of references (nodes) within each of the six concepts that were formed.

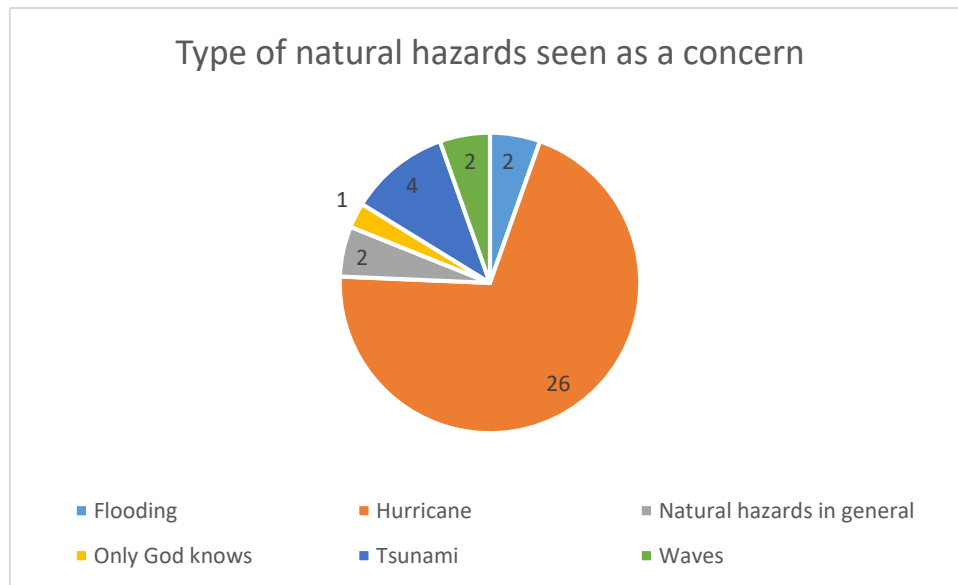


Figure 8: Type of natural hazards seen as a concerned mentioned and expressed by the respondents

Throughout the interviews, it has become clear that most of the people living in Namacu, Koro Island, have never experienced another type of natural disaster than hurricane. In addition, no one has ever experienced a cyclone stronger than Tropical Cyclone Winston. Almost all the respondents have led the conversation towards and around TCW, and have expressed that hurricane is the type of natural hazard that is the biggest concern.

For us it's about cyclones and hurricanes, that's what comes to mind since we've faced it before.

Interview #25 (Male, farmer/driver)

The concept which had most references (nodes) within the category of “Preparation measures in everyday life” was “Stronger buildings”. Figure 9 shows the number of references (nodes) within each of the five concepts that were shaped.

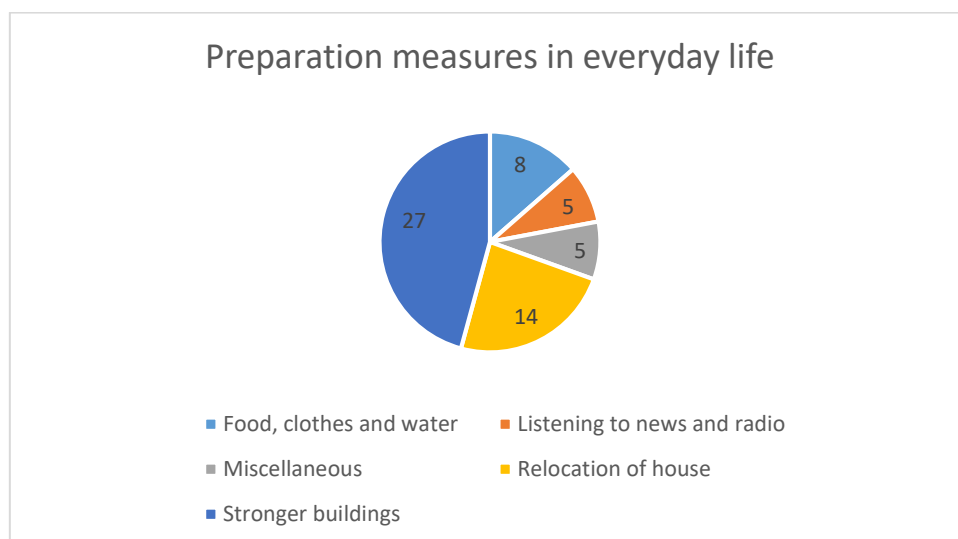


Figure 9: Preparation measures in everyday life mentioned and expressed by the respondents

As shown above, in Figure 9, most of the measures expressed by the respondents are connected to either “Stronger buildings” or “Relocation of house”. When conducting the interviews and from exploring Namacu it has become clear that Tropical Cyclone Winston brought severe destruction to the village. Almost all of the buildings were either in need of construction or completely demolished

after TCW. Many of the houses were not only affected by wind, but also from waves which forced people to relocate during TCW.

Construction work is currently part of everyday-life in the village. Some of the demolished buildings have been rebuilt or are about to be rebuilt, while others have been left to decay. With this in mind, the researchers have become interested in people's eagerness to relocate within the village. As shown in Figure 10, people both express that relocation is taking place, but also that houses are or are about to be rebuilt in the same position. However, almost no plans or desires to relocate from the village or from Koro Island have been expressed by the respondents.

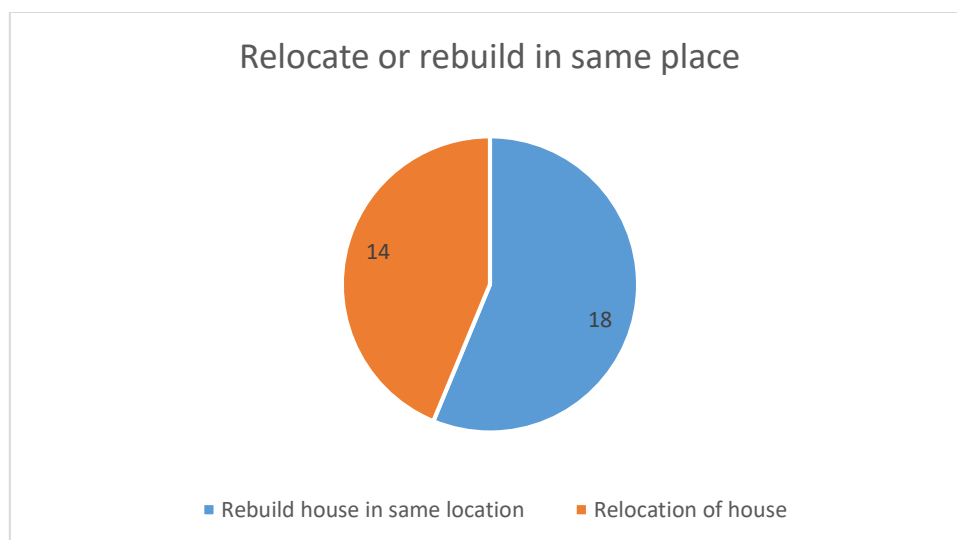


Figure 10: Plans/desire/fulfilled relocation of house, or rebuilding of house in same location mentioned and expressed by the respondents

Some of the most mentioned reasons for “Rebuilding house in same location” have been that the respondents are feeling that the house is in a safe place already, or that they just chose to stay because it is easier and cheaper to just rebuild the house in the same location.

I was thinking about shifting uphill but the expensive parts of the house were still intact. I just had to install the roof again. That is why I stayed.

Interview #18 (Male, farmer)

Many of the respondents led the conversation towards hurricanes and TCW. During field work, it became clear to the researchers that the villagers usually get some type of warning a couple of days before a hurricane or cyclone is about to strike. As such, preparations measures after warning is given became a part of many of the interviews. The following figure shows the concepts that explain what type of preparations measures that the respondents were mentioning and expressing when describing what they were planning to do after a warning is given.

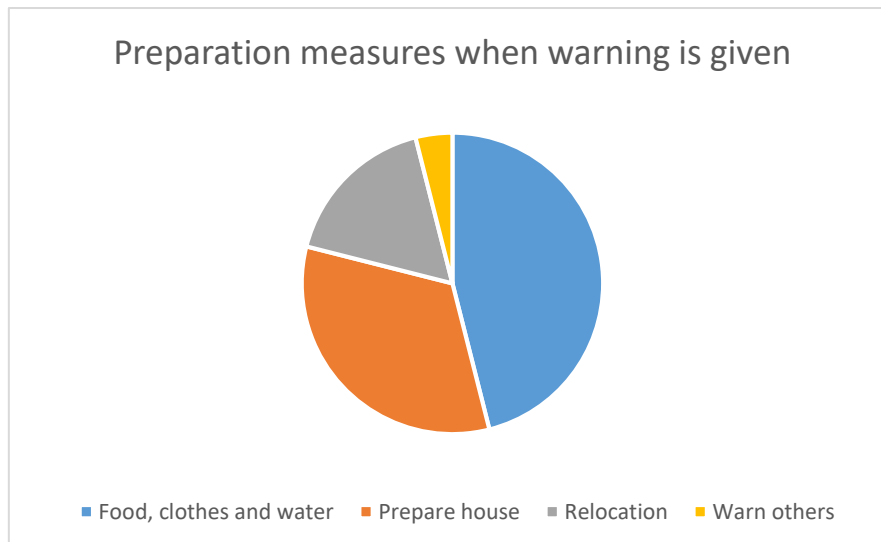


Figure 11: Preparation measures the respondents plan to do when warning is given.

As can be seen from Figure 11, many of the references around “Preparation measures when warning is given” have to do with food, clothes and water. However, from the interviews, it became clear that many of the respondents do not prepare food that will last for a long period of time. Instead, they are planning on using the crops from the farms on the island until assistance arrives. As can be seen from Figure 5, most of the respondents are farmers or some of their family members are farmers. Most of the farms are located higher up in the hills and a large portion of the daily food that is consumed in the village is grown on these local farms. The citation below answers how much food a man would bring when warning is given. His plan is to relocate uphill when a warning is given.

Now we do not have to take 3-4 days. We can just take 1 or 2 meals because after the natural hazard we can take the crops that are up the hill. Not just like those in the city that need to go to the supermarket, were they have to wait for assistance after that.

Interview #3 (Male, farmer)

As shown in Figure 11, relocation has been mentioned as a preparation measure once warning is given. The type of relocation differs a lot between different respondents. Some of the respondents have only mentioned that they are planning on moving to a safer place once others have a more particular house or building in mind.

6.2 How has previous disasters affected their perception towards natural hazards?

Out of the 27 respondents, 20 were on Koro Island when TCW struck. It has come to the researchers understanding that the respondents were all aware of the fact that TCW was coming. They both witnessed signs given by nature, received warnings over the radio and through government officials.

Before Winston, what all those other people said, we experienced hot sun, signs like that. But we thought it would be a small one. Four days before Winston strike us, the police came to me to advise the whole village about preparation.

Interview #27 (Male, carpenter and farmer)

The power of the cyclone came as a surprise to the villagers. Several of them have mentioned that they did not know what a Category 5 cyclone meant.

During Winston, the warning came to us one week before it (Winston) reached us, but we didn't know what category meant, we just take it easy and not worry about anything. Because we didn't know what Category 5 is, if we knew by that time we would be prepared.

Interview #27 (Male, carpenter and farmer)

The respondent in Interview #27 was the village headman at the time when TCW struck. He had received a warning about TCW from the local police. Neither the village headman nor the police knew what Category 5 meant. The respondent expressed that he thought a “Category 1” was stronger than a “Category 5”.

Throughout the interviews, it has become clear that the preparation measures after the warning was given, were few. The villagers underestimated the power of TCW and thought it was only going to be a “small” hurricane. Only one person has clearly expressed that she chose to relocate after the warning was given to her. Instead, people had a tendency to stay in their houses and then relocate later, once their house got damaged, and they were forced to leave. Below, a man describes what he was doing during TCW.

First, I went from my house to Bale’s house then that house blew away and we shifted to Dee’s house. When we reached that house almost all the members of the village were under that house.

Interview #11 (Male, farmer)

The destruction brought by TCW forced the villagers to move around in the village in order to search for a safer place. From the interviews, the researchers have understood that a big part of the villagers ended up underneath one of the few houses that were still intact and that was located far away from the ocean. As can be seen from Figure 11, many of the respondents are now planning on relocating once a warning is received.

Figure 12 shows types of response activities during TCW that was expressed and mentioned by the respondents. It can be seen that relocation and helping others was the main parts of the response activities.

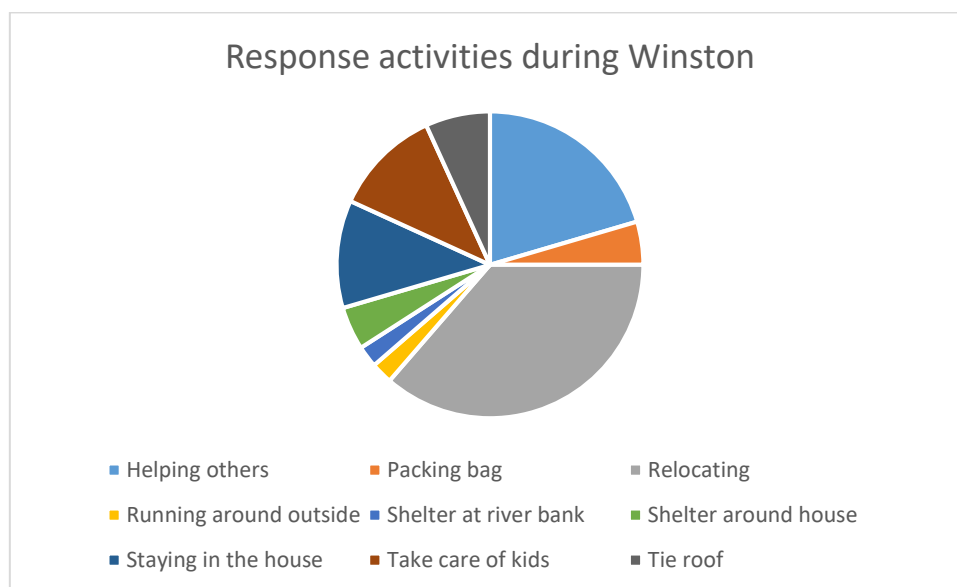


Figure 12: Response activities during Winston mentioned and expressed by the respondents

There are several quotes from the interviews indicating signs of an increased risk perception and/or preparedness awareness after experiencing disasters. Even respondents who were not on Koro Island during TCW have expressed thoughts which demonstrate an increased awareness. The following figure shows the four concepts that were formed and used in order to get an understanding of how experience has affected the respondents’ awareness towards natural hazards. The numbers shown in the figure are the number of times a word, phrase or sentence showed a significant change in either preparedness and/or risk perception. The figure shows the number of references (nodes) and not the number of respondents expressing significant change.

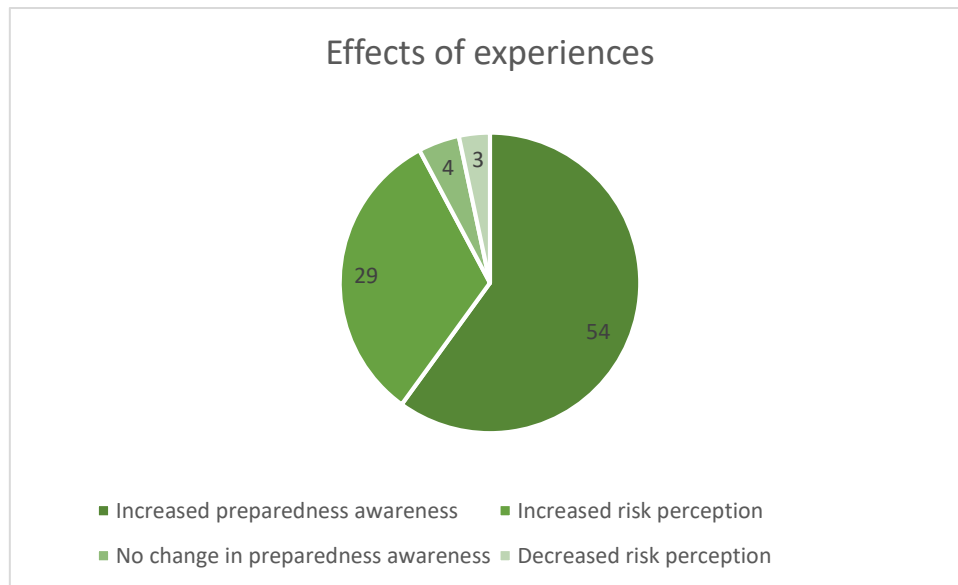


Figure 13: Signs of effects from previous experiences expressed by the respondents

As can be seen from Figure 13, the signs of either an increased preparedness awareness or increased risk perception are many. Some thoughts from the respondents that clearly shows an increased awareness are shown below.

Every day we prepare for hurricane because of what we were facing during Winston. It has taught us a lesson. Before Winston when they advised us about hurricane, we didn't take it seriously. But now we seriously prepare for hurricane because it will happen!

Interview #2 (Male, pastor, on Koro during Winston)

Before we were OK with just staying home and to see what will happened. After Winston that has really changed for me. Now we're taking measures to move to a safer place for shelter. We're really doing that now. Before I just used to take it all for granted.

Interview #20 (Female, teacher, on Koro during Winston)

The biggest experience is cyclone Winston for all the people on Koro. Before when they gave us warning on the radio, we were relaxed. But after cyclone Winston, just last year there was a hurricane warning, not even a hurricane, just strong winds and even the children in the schools got frightened since they thought it would be another hurricane. That is the mentality now, getting more prepared and more alert to the warnings that are coming. I think the people is getting more mentally prepared now.

Interview #17 (Male, retired, not on Koro during Winston)

No significant difference in increased risk awareness and preparation awareness could be noticed when comparing people who were on Koro Island during TCW and people who were not.

As mentioned in the citation from Interview #17, people perceive themselves to be more mentally prepared now. People seem to believe that they would be able to handle a disaster better since they experienced TCW. One of the respondents expressed the following when getting a question regarding if he felt prepared for a similar event as TCW:

I would like to think so as I survived Winston. So if there would be another one, category 6, I think I would survive it.

Interview #21 (Male, teacher, on Koro during Winston)

When asking questions about when a similar event as TCW would strike Koro the following data was collected and formed:

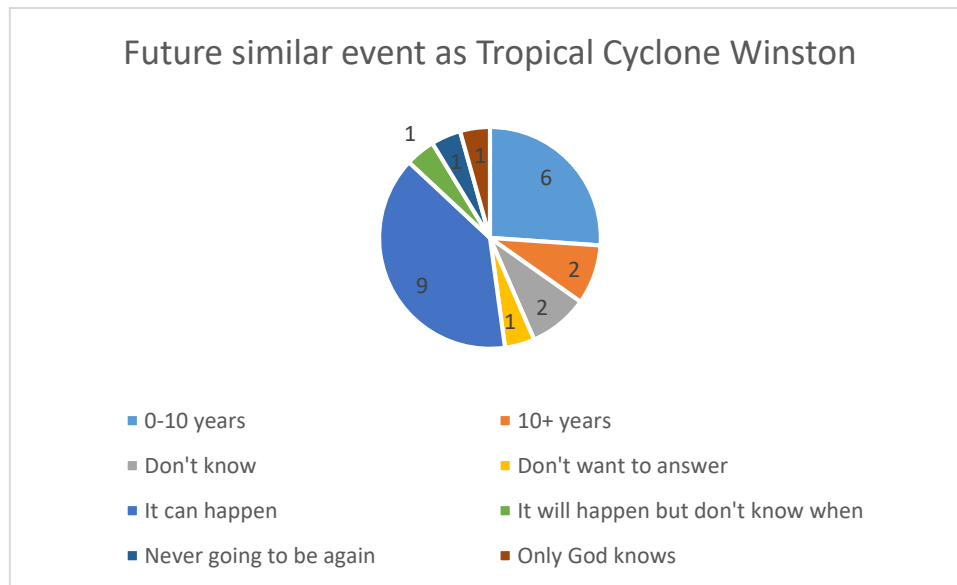


Figure 14: Perceived expectation for future event similar to Tropical Cyclone Winston

As can be seen from Figure 14 above, most of the respondents think that a similar event as TCW will happen again, and some of them even think that it is going to happen within the next ten years. It should be clarified that the numbers shown in Figure 14 are number of respondents (sources). From conducting the interviews and from staying in Namacu it is hard to see many actual preparation measures being carried out on a daily basis, even though the awareness has increased and many of the respondents believe that a similar event as TCW can happen. As mentioned earlier, construction is part of the everyday life in the village now. Despite this, almost two years after TCW, many of the villagers live in temporary houses. When getting a similar question as the respondent above another of the respondents expressed the following:

We can't cope with that. We rely mostly on the farming so that will take years to get back. After ten years, we can do that but for now if the cyclone would happen the same sequence would be.

Interview #17 (Male, farmer, not on Koro during Winston)

Interviewee #21 highlights something that most of the respondents seem to have in common. The fact that they believe that they would be able to survive another hurricane similar to TCW. Worth mentioning is that no one in Namacu died during TCW. The second citation, Interview #17, highlights that the same sequence would be if an event similar to TCW would strike the village. From our observations, the village does not seem to be highly prepared for a similar event as TCW. Even though TCW appears to have brought an increased risk awareness and an increased awareness of preparedness, people's living conditions are not different from before TCW. As such, the researchers' observations are in line with the second citation.

6.3 What motivates the households to improve their level of preparedness?

In order to answer the sub-question above, the researchers first needed to find out if people are motivated to improve their level of preparedness.

6.3.1 Training and information

When asking people if they had have any type of training the following distribution was shown:

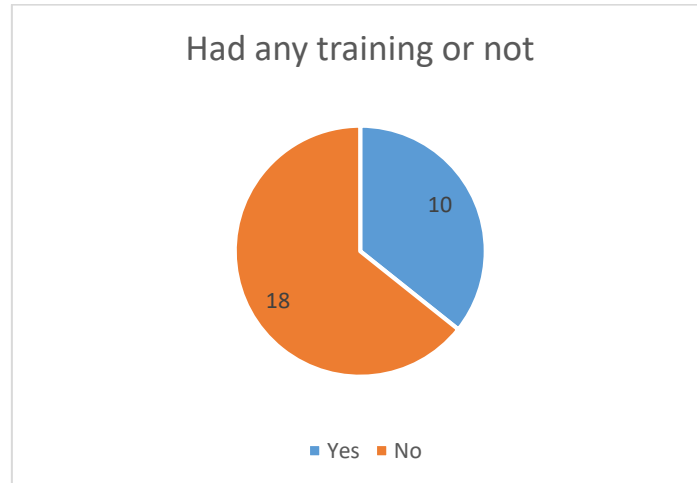


Figure 15: Number of respondents addressing if they have received training or not.

As can be seen from Figure 15, most of the respondents indicated that they had not had any type of training.

In addition to this, questions regarding eagerness for training and info was asked and the following distribution among the respondents became clear.

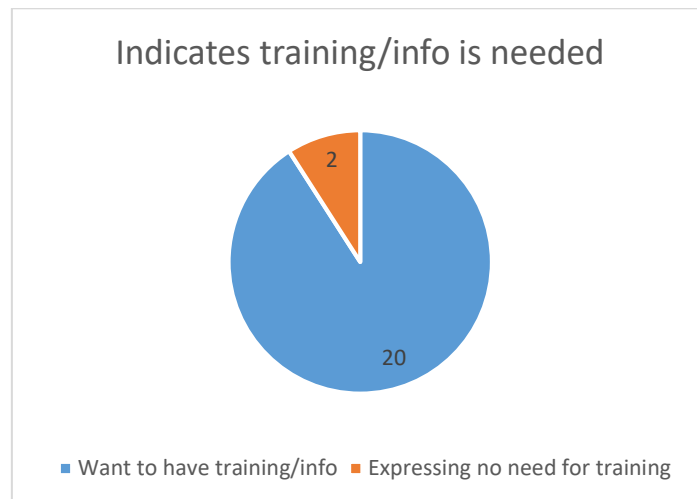


Figure 16: Number of respondents highlighting training/info needed

As shown in Figure 16, twenty of the respondents expressed that they want to have training or receive info regarding preparedness for disasters. Among the two respondents who expressed no need for training, one of them still expressed that awareness was needed. It should also be clarified that Figure 16 shows the number of respondents (sources) who have expressed eagerness for training and not the number of references (nodes) connected to the sources.

When being in the village the researchers were told by some of the villagers that an organization had been in the village about a week before. They had been given info regarding awareness for disasters. In order to get a better understanding of the respondents' actual eagerness to get further training/info,

the researchers asked the respondents if they showed up. During the coding process, the following concepts regarding if and why the respondents showed up or not were constructed:

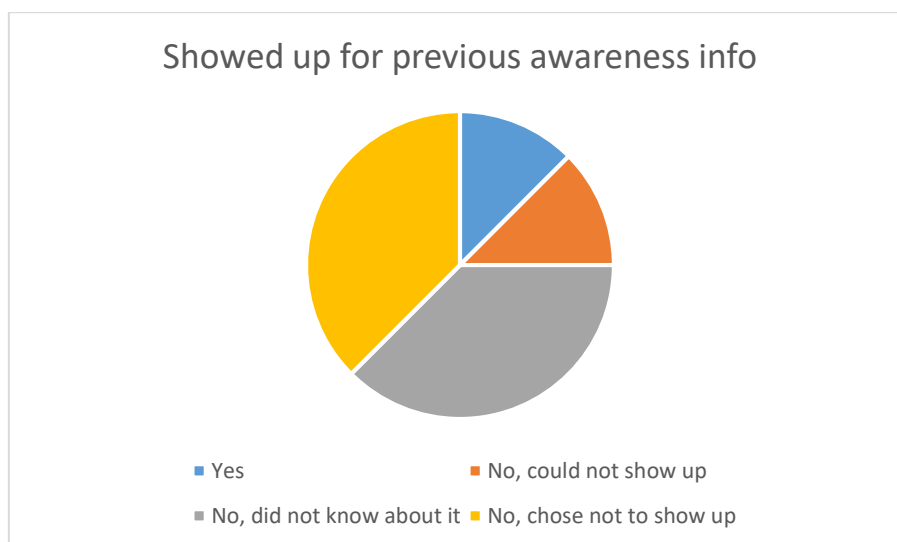


Figure 17: number of respondent expressing if and why they showed up or not for previous awareness info

Figure 17 shows that only one of the eight respondents who were asked actually showed up. Even if the number of respondents in the figure above are few, it became clear from talking to other villagers that only a few showed up when the info was given.

6.3.2 Needs and values

To get a better understanding of people's willingness to improve their preparedness level, questions regarding needs and values were asked. When questions regarding needs and values were asked, most of the respondents' responses came fast and highlighted that life safety is the number one priority. The following citation describes the respondents expressed thoughts in a good way.

The most valuable thing is my life, I have to protect myself. Nothing about property. So I have to move in to a safe place if the winds get strong to protect myself. I do not worry about properties.

Interview #6 (Male, retired)

When describing what type of needs that are missing in the village most of the needs missing were connected to not having an evacuation centre, missing funds for evacuation centre or just a lack of money in general.

If we would be staying at the same evacuation centre, it is easier. If we have an evacuation centre for the whole village it would be easier. But if staying apart like this, by that (disaster) time it is hard to go and get them. If the village could get an evacuation centre by that time, that could cater for everyone in the village.

Interview #24 (Male, farmer)

Few of the needs expressed had to do with something else than life safety. The villagers appear to be happy with what they have.

Also, it became clear that the respondents' external needs in everyday life, which arrives with the weekly ferry from Suva, are few compared to more developed societies.

6.4 What are people's perception towards accountability for preparedness?

After the process of coding, three different concepts were used to answering the sub-question stated above. These were "Accountability on household level", "Expectations within village" and "External expectations".

6.4.1 Household Level

It became clear during the interviews that the villagers feel accountable for their households before and during a disaster. Out of the 27 respondents, 23 revealed that they feel accountable for their household during a disaster. The collected data also shows that 18 respondents feel responsible for preparing their household before a disaster strike.

The government will look after me after the hurricane. During hurricane I protect me and my family.

Interview #22 (Village Headman)

The collected data shows clearly how the villagers believe that it is their responsibility to prepare and look after themselves and the household during a disaster.

The village headman knows what to do but when they exclude us I can't do much about it. Just forget it. So it better for me to do it on my own instead of relying on the headman of Mondu.

Interview #25 (Male, farmer)

Here in Fiji the government is not very big, not as big as in Sweden. In Sweden the government is almost everywhere. Wherever you go the governments arm is there. But the arm is very small here. Only a few governmental people here on the island. So when it strikes, it will take long time before help arrives. Everybody is counting on themselves.

That is what happens here every time.

Interview #17 (Male, former UN Soldier)

Some respondents highlighted lack of faith in local- and national helping-processes, which made them feel more responsible for themselves and the household, as can be seen in the two quotes above.

6.4.2 Community and Village Level

Figure 18 shows five concepts that were found regarding accountability and expectations on the village level.



Figure 18: Peoples view on accountability and expectations within the village

“Responsible for other in village” was mentioned most frequently when talking about the accountability on a community level. This was especially brought up when talking to the current- and previous village headman, as can be seen in the following quotes.

If hurricane comes, I will tell them to prepare for that. To put shutter on the windows. If there's a tsunami I will tell them to go up the hill.

Interview #22 (Male, village headman)

It is village headman responsibility and us people like my age group because we are strong enough to lift the old people up here.

Our responsibility was to look after the whole village. We were walking around and asking them if they were prepared. We look after the whole village, not just the household.

Interview #27 (Male, former village headman)

The village headman and his assistant are elected every third year by the village. The village headman is representing the village when there are meetings involving multiple villages on the island. The village headman walks around the village occasionally and provides the other villagers with news and information that might be of interest.

The second most frequented concept was “The village has a responsibility”. It covers people’s perception of the village as at least partly responsible for being prepared and dealing with disasters.

Living in the village. Only the village headman, if something like that, he is responsible. He is responsible for everyone in the village to get proper training. To look after evacuation centre before any warning comes. Evacuation centre for all age groups, adults and children. When something comes it is easier to have everybody in the same evacuation centre, if the food is short or something happens they can help. I think the village head man, it is his part.

Interview #24 (Male, farmer)

Multiple observations while in the village confirmed that the old people would have difficulties moving quickly if there would be an emergency. To be able to handle an emergency where it would be essential to run or relocate quickly, some of the younger and stronger men spoke it being their responsibility to help the elders to relocate. It was occasionally mentioned that the older villagers, who did not have any kids were also more at risk of being forgotten since the culture is focused on family and relatives. Due to this, it was highlighted that the rest of the villagers’ shared the responsibility for taking care of the people with no families.

6.4.3 External Help, Government, NGOs etc.

As could be seen above in “Household Level”, the respondents have shown that they perceive themselves as responsible for preparing and managing themselves during the event. When discussing their expectations of external help, the tendency was that external help is expected if necessary. However, the expectations connected to external help were only expected in the aftermath of an event. The only thing that multiple respondents expected as a preparation measure was an evacuation centre for the village. This was expected by the government since it would be too expensive for the villagers to fund/built themselves.

Figure 19 shows the collected data regarding the respondents’ expectations on external help when it comes to managing a disaster. Note that expectations on evacuation centre have been excluded as it is considered to be a measure that must be planned and built in advance. The expectations in the figure below show that the respondents mostly have expectations in the recovery phase of a disaster. The only expectation that is not part of the recovering phase is “awareness”. During the field study, it became clear that the villagers receive warnings of upcoming hazards either through the radio or from the village headman when walking around, announcing messages.

I think that the government's main role would be to just give us a warning at the right time to help us prepare.

Interview #20 (Female, teacher)



Figure 19: Type of expectations on external help, excluded providing evacuation centre. The numbers in the figure shows the amount of nodes/references that were mentioned in the interviews.

The respondents tended to have expectations on receiving external help in the recovering-phase if necessary. However, there is no clear trend in how urgent they are expecting to receive the help. Some people highlighted that it was urgently needed at the same time as other respondents would appreciate the help, but they would manage without it. If a trend would be found from the collected and analysed data, it would be “*sooner the better*” with receiving aid.

They will come, but we can never expect them to come soon enough so we have to look after ourselves. We have to do whatever we can do to continuing our lives after a hurricane, so until help comes, we have to do whatever we can.

Interview #6 (Male, retired)

To be able to manage to survive without receiving aid, the villagers are dependent on getting food in forms of plants on the island or fish from the sea. The crops and fruits grow mainly on farms but also in the forest. Observations and interviews have shown that the people on Koro Island could manage to survive, without receiving food from outside the island, for an extended period of time, as long as their farms are intact. If their farms are damaged, as happened during TCW, they are in need of more urgent help regarding food supplies. During such times, the locals have to cater for themselves by searching for food until aid arrives.

It can take one month or one year. Because after hurricane there was no dalo (type of crop) left, but when we went to the bush it was some cassawa (type of crop) there planted by God.

Interview #22 (Male, village headman)

The quote from Interview #6 describes how the people are expecting help after a disaster. However, Interviewee #6 recognizes that they cannot rely on receiving the aid fast enough. Therefore, they are accountable themselves to look after each other.

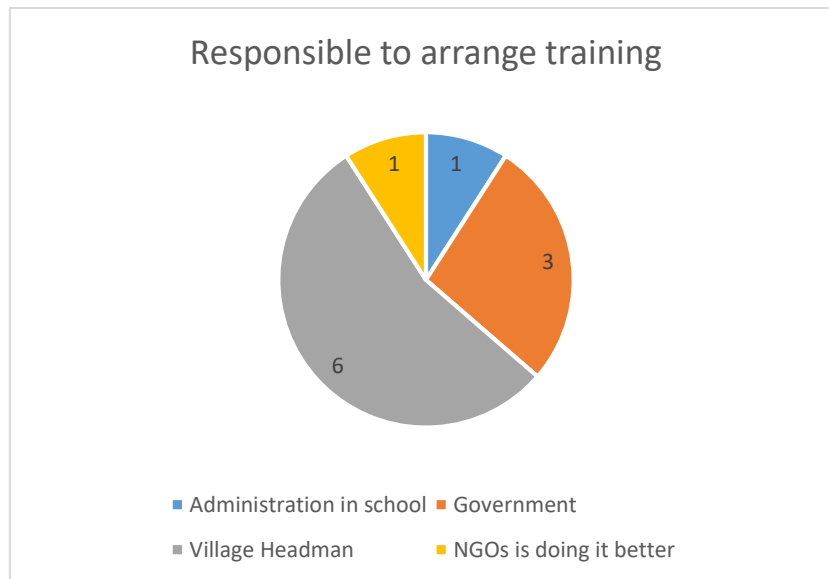


Figure 20: Who is responsible to arrange training for the villager. The numbers in the figure shows the amount of nodes/references that were mentioned in the interviews.

The village headman was brought up most times as the one who was perceived as responsible for making sure that the villagers would be provided with proper training for managing disasters. It was argued that the village headman is supposed to function as a representative, and therefore, it is within his tasks to request training for the village. It is shown in the quote below, from Interview #5, how this process is believed to function. However, as the village headman is just supposed to make the request, the final responsibility is believed to be on the government.

The headman should bring it up in the provincial meeting and the provincial meeting should bring it up to the government.

Interview #5 (Housewife)

6.5 Miscellaneous results

This section includes results that show trends and generalizations that are not directly connected to the sub-research questions. The results presented in this section have been chosen as they provide valuable information which is of interest to the main research question.

6.5.1 Koro Island compared to other places

The collected data showed a clear trend that the respondents believe that Koro Island is safer than other places in the world. Most of the respondent perceived Koro Island as a place less prone to natural hazards compared to other places in the world, which is being shown in Figure 21.

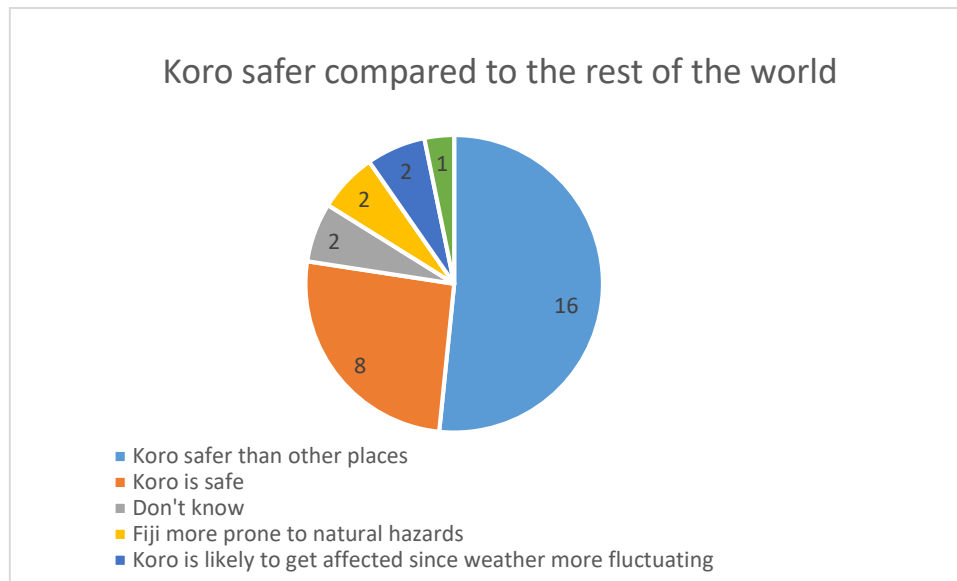


Figure 21: People's perception towards if Koro is safer than other places in the world.

The overall impression by observations and conversations was that the villagers would not like to live anywhere else. A possible explanation for this might be that most of the villagers had limited knowledge about what is outside of Koro Island and Fiji. During conversations, back on the main island (Vitu Levu), it was clear that people who had moved from Koro Island to the main island, because of the damages of TCW, were eager to move back to Koro. The main reason for this was that they missed the village life and did not enjoy living in a city (Suva). The city was perceived as busy and a place where money and earnings play a bigger part. The quotes below show opinions regarding whether Koro Island is perceived safe or not.

Fiji is a small island so I can't compare with countries as USA. I think that America has big fires and there has been hurricanes their two times this week. So I think that Fiji is far better than the big countries. Sometimes of the 6 months of hurricane season, we don't even get any hurricanes.

Interview #6 (Male, retired)

Other parts of the world are facing more natural hazards than Fiji

Interview #12 (Male, carpenter and farmer)

No. Koro and Fiji is the most safe.

Interview #14 (Housewife)

The respondents tended to base their thoughts on what they hear on the news. Except for receiving information through the news on the radio, the villagers did not seem to have any other source of information.

According to the news on the radio, Fiji are much better. The other countries feel more natural hazards than Fiji. But in Fiji the most common one is Winston and we didn't expect that.

Interview #18 (Male, retired)

Even though the most common finding was that Fiji and Koro Island is the safest place on earth, some respondents tended to have a larger awareness regarding Koro's safety related to other parts of the world.

Yes (Koro is a more dangerous place than other parts of the world), because we feel the climate change. The climate is changed. The waves, the wind, everyday it's windy, the sun is hotter. When the sun is hot, the winds are storing and the waves are rough, it all at the same time. Before, it has not been like that but now with climate change it's very dangerous. But Fiji is safe right now.

Interview #25 (Male, farmer/driver)

Yes, Fiji is more prone to hurricanes because now we have season from November to April. 6 months of hurricane season. Where I went, Lebanon for example, no hurricane season there. And Egypt doesn't have any hurricane season. Iraq no hurricane season

Interview #17 (Male, retired, Former UN Soldier)

Note that observations indicated that the respondents, who do not believe Koro Island is the safest place in the world, would not like to move anywhere else. This as they enjoyed living the village-life on the island which they perceive as home.

6.5.2 Ability for evacuation

From staying at Koro Island it has become clear that the residents have good local knowledge of the village and the surroundings. As mentioned earlier, most of the respondents have lived on Koro Island their entire life. When asking questions about the perceived ability to find their way to safety during night time most of the respondents were confident that they will find their way. However, during the interviews and from talking to residents on Koro Island it became obvious that the people understood that the destruction caused by TCW would have been much worse if the cyclone had struck the island night time. Also, respondents have expressed worries about future hurricanes happening during night-time.

Depends if it happens during daytime. If it happens during the night, there is nothing you can do. When Winston came it was daylight, then we could see when roofs were coming. Night time you can't see. You can't leave your house and go.

Interview #6 (Male, carpenter and farmer)

The only saving grace here in Nasau was that it happened during daytime. If it would have happened during the night, I think the death count would have been more.

Interview #20 (Female, teacher)

From hearing the stories about TCW and from seeing the signs of its destruction it is surprising that the casualties around the island only were a few. The researchers' observations are in line with the citations above.

Respondents have expressed how they ran around and had to duck from roofs flying around in order to save their own lives. The following two citations are part of what respondents witnessed during TCW.

Once we stayed here I saw those irons (metal roof) flying around like papers. They passed this house. The roofs. Flying everywhere, can't stop them, that side and the other side of the river.

Interview #24 (Male, farmer)

I cannot even see that house (about 50 metres away). We have to run and look everywhere because the roofs were flying around.

Interview #13 (Housewife)

Both the temporary and the permanent houses that the villagers are living in are small. There are no bigger buildings in the village at the moment. However, there are plans on building a new, more robust church. There are no laws or regulations on how the buildings shall be built on Koro Island. Therefore, the villagers build their own houses and the ability to evacuate in case of fire or such, is not standardized. As the current buildings are small and the layouts simple the needs for evacuation strategies within the buildings are low.

Interviewee: On Koro, why don't people build their houses to the engineering standard?

Respondent: because we are free to build as we wants. If there would be rules, we would follow them. We just built the houses and test them in the future. There is no law. Those rules are just used in urban areas.

Interview #27 (Carpenter)

Observations on site showed that the kitchens were usually separated from the residential building, which shows an awareness regarding the fire hazard. The villagers show signs of awareness of urban planning as they are rebuilding the village church in a different location. This as the previous church was located approximately 10-20 meters from the ocean and was destroyed during TCW. The new church is to be placed further up in the village and might be built so it can function as an evacuation centre during emergencies. See chapter 7.4 for further elaboration regarding the villagers' ability to evacuate in future hazards.

7 Discussion

This chapter consists of a discussion of the observations on site and the outcomes of this field study. The results and the observations made by the researchers are being compared to existing literature on the subject in order to elaborate how the findings of this study relate to existing knowledge.

7.1 Factors influencing perception of risk and preparedness

There are several factors that normally trigger an improved preparedness level. These factors can be divided into demographic, socioeconomic and structural/geographical characteristics. Part of the scope of the study was to investigate if the villagers feel motivated to be prepared and what triggers their motivation. This is found valuable as it provides knowledge about how different factors are affecting people's perception towards preparedness.

During the analysing of data, it became clear that several factors are affecting the respondents' perception towards risk and preparedness. These factors are heavily interconnected. This section contains discussions and elaborations regarding what the respondents revealed in the interviews, how this corresponds to the actions carried out by the villagers and how it relates to previous studies.

7.1.1 Previous experiences

One of the dominating factors affecting how people perceive risk and preparedness was the influence of their previous experiences. The interviews with the locals have revealed how their perception towards preparedness has changed after TCW. This reoccurring finding can be found in previous studies, which confirms how people's preparedness tend to increase when they have witnessed a previous event (Horney et al., 2008).

This section contains a discussion where the researchers elaborate on the findings that are connected to the locals' preparedness and how their perception towards risk and preparedness has changed after previous experiences.

7.1.1.1 *Increased risk and preparation awareness towards hurricanes*

The findings show that the locals' perception towards preparedness has changed after TCW. Before TCW, the awareness about preparedness against natural hazards was absent in the village. The results strongly show how the villagers believe that it is important to be prepared and to carry out preparation measures before the next severe natural hazard strikes the island. Existing literature confirms how previous experiences have a tendency to increase disaster preparedness. In general, households which earlier have experienced damage and loss tend to be better prepared when disaster strikes (Horney et al., 2008).

From what has been shown in Chapter 6.1, the previous experiences from TCW have resulted in an increased risk and hazard awareness, and an increase preparedness awareness. Before TCW, the respondents did not use to prepare their households even when a warning was given. During the interviews, almost all of the respondents stated that they will now prepare themselves once a warning is given, and not ignore the warnings as they tended to do before TCW. This goes in line with Hoffmann & Muttarak (2017), findings.

As shown in Figure 12, many of the respondents had to relocate during TCW. As shown in Figure 11, they are now planning on doing that right away when a warning is given. The respondents have gained an understanding of which houses in the village that might be good to relocate. They have also understood that it is better to relocate before an emergency rather than during. The respondents have not expressed the need of being home during natural hazards in order to take care of their houses or belongings. They rather leave the house in order to be safe. This indicates that their life is the most valuable thing. Studies conducted by Horney et al. (2008) confirm these finding by stating that households are more likely to have an evacuation strategy if they have evacuated earlier.

In studies, it has been shown that previous experience effects risk perception towards disasters. As shown in Figure 8, hurricane is the natural hazard which is the biggest concern among the respondents. This is understandable since locals on Koro Island usually witnesses hurricanes and TCW occurred less than two years ago. People who have experienced a certain natural hazard, such as floods, tend to overestimate the actual danger (Bronfman et al., 2016). The researchers can only speculate if the respondents overestimate or underestimates the actual danger of cyclones. Cyclones happen often, but events as strong as TCW are rare and have not occurred in a long time.

When asked, one-third of the respondents believed that there would be an equally strong hurricane as TCW within the next ten years. This could indicate that the respondents may overestimate the actual danger since TCW was the strongest tropical cyclone on record in the Southern Hemisphere. These findings go in line with Enander (2008), who states that events that occurred recently and had large consequences are often perceived as happening more often than they actually do. However, the respondents have not indicated that they are aware of TCW being the strongest tropical cyclone south of the equator. This might be explained by the in general lack of knowledge about natural hazards occurring in other places around the world. The respondents just know that a stronger cyclone has never occurred on Koro Island. The researchers believe that this could affect the respondents' anticipation of when a similar event as TCW will occur. If they knew that TCW was the strongest cyclone ever recorded in the southern hemisphere, they might think that the probability of a similar event as TCW within the upcoming ten years is low.

7.1.1.2 Risk perception towards natural hazards other than hurricanes

Except for hurricane, few other natural hazards appear to be of concern to the respondents. Even though Fiji is located on the Pacific Ring of Fire, the worries connected to tsunamis and earthquakes are few. This might be explained by the low knowledge regarding hazards other than hurricanes. E.g. some respondents have explained the waves which came in over the village during TCW as tsunami waves. From carrying out the study it is clear that the waves during TCW were not very powerful. The researchers understanding is that seawater came in over the village due to the heavy winds, but the actual destruction caused by the water only appears to be vital for the buildings closest to shore. Despite how powerful the waves during TCW were, the villagers have witnessed destruction from both wind and water. The understanding of the waves during TCW as devastating tsunami waves indicates that the knowledge regarding tsunamis in the village is low. Few of the respondents have expressed an understanding about the creation of tsunamis connected to earthquakes. This goes in line with Bronfman et al. (2016), who argues that the risk perception towards a hazard can be affected negatively if the populations' knowledge about the hazard is lacking. Similar arguments are highlighted by Donahue et al. (2013) and Enander (2008).

As mentioned earlier, once a warning is given the villagers are planning on preparing. This is understandable since they usually get a warning when a hurricane is about to strike, and the most mentioned type of natural hazard is hurricane. Few of the respondents are preparing for hazards which can occur without any prior warning, such as tsunamis. From being in the villages and from carrying out the study, the researchers' understanding is that except for hurricanes the knowledge regarding natural hazards is low and that the experiences from other types of hazards are few. Even though the villagers have witnessed destruction from water, the waves during TCW were not very powerful. The waves occurred because of the hard winds during TCW. They were not a separate event and not caused by an earthquake. Just like expressed in citations in Chapter 6.1, the respondents have highlighted that they only see hurricane, and nothing else as a concern, since they only have experienced hurricanes. This is understandable and goes in line with Bronfman et al. (2016) who states that people who have not witnessed such a disaster are expected to underestimate the likelihood of the hazard. With the above in mind, the researchers argue that the previous experiences from cyclones do not appear to have increased the concerns and preparedness against other types of natural hazards.

7.1.2 Local knowledge

Most of the villagers in Namacu have lived in the village their whole life. This has resulted in a high knowledge about the surroundings and a good local knowledge about which natural hazards that have occurred previously. Local knowledge tends to increase disaster awareness- and preparedness and leads to a better understanding of hazard risks (Hoffmann & Muttarak, 2017). The villagers show high awareness towards hurricanes. They also appear to have great coping skills. However, as their knowledge is mostly limited to Koro Island, it can be argued that the villagers might experience a false sense of security towards other natural hazards, such as tsunamis and earthquakes. Despite this, it should be highlighted that their sense of security might be justified since there have not been any other natural hazards on the island, which have made the villagers adapt to the local conditions. Therefore, it might not be reasonable for the locals to be worried and prepared for natural hazards that have not yet happened. Especially when considering the local living conditions. If a natural hazard would occur on the island, other than a hurricane, the researchers opine that the villagers would adapt and change their perception and awareness thereafter. This since it is obvious how their awareness and perception towards hurricanes has changed after TCW.

7.1.3 Values

When discussing needs and values, the respondents undoubtedly expressed that life safety is the most important thing in their life. People in the community do not worry about the rest. This indicates that the worries are not connected to how everyday life is going to be after a natural hazard. The only important aspect is to survive the event. The researchers believe that the view of only prioritizing life strongly affects the measures that the villagers are willing to conduct in order to increase their ability to recover. Since they are satisfied as long as they survive, the motivating to improve their recovery-phase after an event is lacking. Since they do not tend to value their belongings and properties, why would they do any measures to protect these? Most of the respondents plan to leave their houses and relocate to a safer place in case of an emergency, and therefore they might not prioritize to make their own house stronger.

Evacuation centre is mentioned as a need that is missing and it is clear that an evacuation centre also has to do with life safety. It is not something that would change the everyday life of the villagers, it would just help them to outlive upcoming events. Possible positive effects of an evacuation centre are discussed in Section 7.2.

7.1.3.1 *No loss of life*

An important factor affecting the villagers' perception towards preparedness is that there were no casualties in the village during TCW. This is relevant as the respondents highlighted their lives as the most valuable thing. As discussed earlier, the respondents might have a false sense of security regarding preparedness, since they survived TCW. If believing that you will survive upcoming natural hazards since you survived previous ones, and only valuing life, why put an effort into preparing yourselves further? Since there were no deaths connected to TCW, the villagers might not be motivated enough to show up for training/information since they protected the only thing they are afraid of losing, their lives. The researchers believe this is a factor that plays a vital role in explaining the villagers' behaviour and perception.

7.1.4 Local consumption

Koro Island is a geographically remote island. As stated in Chapter 4.6, geographical isolation has a tendency to lead to increased vulnerability. Despite the geographical isolation, the external needs of Koro Island are few. The people in the villages on Koro Island live a life which has little similarities to developed societies. The pace is slow, most of the food is grown locally, the land is owned by the village as a unit, all the villagers know each other well and many of them are related. The income sources on the island are few and money does not appear to be a worry in everyday life.

The life on the island is very cheap and minimalistic. The villagers express or show no eager towards getting richer or earning more possessions. Instead, they appear to be content with their lifestyle and the belongings they own. Things like property, power or a challenging occupation, which might be seen as common things to strive for in more developed societies, appears to be of low interest among the respondents. In general, there is little envy towards more developed countries and low strive towards becoming a more developed society.

Even though money plays a small part in their lives, some of the respondents have expressed that they would be able to get better prepared and do more mitigation measures if they had more money. This goes well in line with Murphy et al., (2009), who states that having a high income leads to having more recommended supplies. From being in the village, it is the researchers understanding that a higher income among the villagers would probably result in a faster recovery phase and maybe the construction of an emergency centre. Construction material is expensive and it is something that has to be imported to Koro Island. Despite the lack of money, there are several actions that could be done which are not directly connected to a high income, such as storing food and setting up an assembly point. As such, the researchers argue that it is not obvious that higher incomes among the respondents would lead to more actions being carried out. The researchers have earlier discussed how further education and knowledge about natural hazards, but also about the rest of the world, could lead to higher preparedness. This is something that is also mentioned by Hoffmann & Muttarak (2017), who state that education has a stronger effect than income on reducing vulnerability towards natural hazards. The studies conducted by Hoffmann and Muttarak (2017), were also carried out in middle and low-income countries, which reflects Fiji well.

The villagers mainly get their food, such as crops, from their own farms, which are located close to the villages. Additional food, such as fruits, leaves etc., is collected from bushes and trees in the wilderness. As the villages on the island are located by the coast and the sea is abounding in fish, the villagers also use the sea as a source for getting food. Since dependence on locally grown crops is high, the external dependence in everyday life is low. This together with the springs of water make the villagers almost self-sufficient regarding food and water. The ability shown by the villagers on Koro Island connected to self-sufficiency regarding food and water is vital when managing disaster risk reduction. Fiji and Koro, together with other SIDS, are especially in need of being able to show self-sufficiency in the immediate aftermath of any disaster (Shultz et al., 2016). Due to their self-sufficiency regarding food and water, the researchers believe that the villagers in Namacu show a higher coping ability towards disasters than many developed societies. Moreover, the villagers are not as dependent on receiving external help as quickly as other areas that are less self-sufficient in their everyday life.

7.1.5 Feeling safe compared to the rest of the world

When asking questions regarding how safe Koro Island and Fiji is compared to the rest of the world, almost all of the respondents highlighted that Koro Island and Fiji are safe or even safer than any other place in the world. Most of the respondents based this on what they have heard on the news or from what they have seen in movies. On the news, they hear about hurricanes, wildfires, and wars happening in other parts of the world. The respondents consider themselves lucky since they perceive themselves as only affected by hurricanes. Few of the respondents have ever left Fiji. As such, it is understandable to perceive the rest of the world more dangerous in comparison with Fiji, which is a well-known place for the respondents. Among the few people in the village who have left Fiji are two retired soldiers who used to work for the UN and that mainly have visited war zones when being away from Fiji. In addition to the above, the residents tend to only value their lives, and from the researchers understanding, there have been no fatalities in the village due to natural hazards, which gives the villagers an indication that Koro Island is a safe place.

The locals have in informal conversations, highlighted that the level of crime is lower in the villages compared to the rest of the country. Also, as discussed in Section 7.1.1.1, the respondents have not

compared the power of TCW to other cyclones or events around the world. If not knowing how destructive and strong TCW was compared to other cyclones in different parts of the world, it is understandable to think that similar or worse events occur more often in other places since. E.g. several of the respondents have asked the researchers if there are a lot of hurricanes in Sweden. Based on the above, it is clear why the locals do not want to move and why they believe that there is no safer place in the world than Koro Island. It is also understandable that the villagers do not seem to have increased their everyday preparedness since they perceive Koro Island and Fiji as a safe place. If the villagers would perceive Koro as a more dangerous place, the researchers argue that their willingness to prepare would be greater. Hence, the researchers believe that an increased knowledge about the rest of the world could lead to a higher preparedness level and probably make the respondents perceive Koro Island and Fiji as less safe. This goes in line with Raaijmakers et al. (2008) who talks about the connection between awareness, worry and preparedness. However, Raaijmakers et al. (2008) state that awareness can increase if a society is confronted with a hazard or through information and education. Even though Koro was recently struck by TCW, the worries on the island are few. As such, the researchers argue that information and education about hazards might lead to an increased preparedness but also that an increased knowledge about the rest of the world could be enough to increase the current preparedness. However, an increased knowledge about the rest of the world and what type of hazards Koro Island is prone to, leading to worries, might cause distress and disruption for the villagers' way of life. The researchers elaborate further around the villagers' way of life in Section 7.3.

7.1.6 Estimation of future natural hazards

People in high risk areas who have been experiencing previous disasters can show a low risk perception. This could be explained by the fact that they feel that it was not too long ago a disaster struck, and therefore it will not happen again anytime soon. This as they perceive natural events as cycles. If they have recently experienced a natural disaster, it might take decades until the next similar event occurs. This phenomenon is very likely to result in a lopsided risk perception as people believe they are safer than they really are. This will reduce their willingness to make preparedness measures (Bronfman et al., 2016). The results shown in this report are in some ways similar to what is stated by Bronfman et al. (2016). A few of the respondents have mentioned that an event similar to TCW will never occur and it is clear that the preparation measures among the respondents in everyday life are few. However, when a warning is given the respondents are now aware of the need for preparation. Also, the risk perception among the participants appear to have increased after TCW and many of the respondents believe that a similar event as TCW will happen again. Some of them express that it is probably going to happen within the upcoming ten years. This might be explained by hurricane season coming around every year and reminding the villagers about TCW. Respondents have also mentioned changes in climate, with the weather being more fluctuate. This has made some of the respondents believe that hurricanes can happen during any season and not only during hurricane season.

As mentioned earlier, the preparedness level in the village is low, which is contradictory to the estimation of a hurricane as strong as TCW happening within the next ten years. This conflict might be difficult to grasp for any researcher. However, the researchers of this report believe that a potential reason for this is that there were no deaths in the Namacu caused by TCW and that the respondents believe they are better prepared at responding towards future natural hazards since they all survived TCW. Further potential explanations might be that the general pace in the village is slow and the villagers' basic needs were few. This combined can describe why they see no immediate need for increasing their level of preparedness.

7.1.7 Overestimating own ability

During the interviews, some of the respondents revealed that more information and preparation measures are necessary for the village. However, the same respondents did not tend to show up when information was given even though their own preparations measures were lacking. This indicates how

some of the villagers are of the opinion that their own ability is sufficient, but other villagers need to improve theirs. Simply, they might believe their ability and preparedness being better than others. This phenomenon is confirmed and further explained in papers produced by Taylor & Brown (1994) and Moore & Cain (2007). The researchers believe that this puts some of the villagers in a position where they believe they are already better prepared than other villagers, which can decrease their motivation to improve their own preparedness further.

Since the recovering phase is slow, preparation measures are few and the villagers believe that they are more prepared now compared to before TCW, the researchers opine that the respondents appear to overestimate their level of knowledge and ability after experiencing TCW. Thereby, the villagers are at risk of underestimating their vulnerability towards natural hazards. Similar findings have previously been found in studies by Paton and McClure (2013). These have shown that people, and especially men, can overestimate their level of expertise. Moreover, it can also lead to less willingness to increase knowledge and level of preparedness. This since people believe their knowledge and preparedness is sufficient (Paton & McClure, 2013). The researchers argue that this counter-productive phenomenon is at risk putting the villagers in a false sense of security towards natural hazards. Moreover, this partly explains why the villagers are not motivated to increase their knowledge- and preparedness level to a further extent.

7.1.8 Perception influenced by time

Tropical Cyclone Winston occurred less than two years before the study was conducted. The relatively short period of time and the severe damage that TCW caused, can be two factors that explain the increased risk and preparedness awareness among the residents.

There were only a few respondents who highlighted that they had experienced Tropical Cyclone Kina (TCK), in 1992, which is the second strongest tropical cyclone that has hit Fiji (Heatley, 2015). Even though many of the respondents were on Koro Island during TCK, only a few of them highlighted that they had witnessed any other hurricanes, except for TCW. The researchers got the impression that the villagers had almost forgotten about the event, even though it appears to have caused house damages and fallen trees on the island. Sattler et al. (2000) confirm how distress symptoms from earlier experiences tend to get weaker and less attending cognitively and that people tend to forget about events that happened a long time ago. Based on that life is basically the only thing the villagers' value, it is no surprise that the memories from TCK have faded away since there was no loss of life due to the event. If the values and demands among the respondents would have been the same as they are in a western society, the researchers believe it is more likely that the memories would last longer since our values, such as properties, would have been damaged to a further extent during the event.

Studies by Onuma et al. (2017) show that people who experience damage caused by recent, large-scale disaster were better prepared compared to people with experience from other disasters. Same studies show that damage experience has a more significant impact on preparedness compared to evacuation experience. With this in mind, it is of interest to see both how clear the signs of TCW will be in the village in ten or fifteen years, but also if peoples risk and preparedness awareness will change. Even if the participants have not increased their everyday preparedness, they clearly showed an increased risk and preparedness awareness and are now planning on preparing once a warning is given. Will construction of the village lead to people forgetting about TCW and their risk and preparedness awareness decreases? Since the memories of TCK have faded among most respondent, it is fair to state that the memories from TCW will fade away eventually, especially when the recovery and rebuilding phase is over and the signs from the destruction are gone. Since there were no fatalities in Namacu during TCW and few other needs and values, except for life, are being mentioned by the respondents, it is expected that the memories will fade away as time passes. However, TCW was a more destructive event than TCK, possibly leading to high risk and preparedness awareness for a longer period of time.

7.1.9 Low active participation when training and information is given

As shown in Chapter 6.3, most of the villagers have not had any type of training or received any type of information connected to what to do before or during a disaster. Among those who have received some type of information, the information has been about awareness. Studies conducted by Donahue et al., (2013) shows that those who are informed are in general better prepared. However, it should be clarified that the studies conducted by Donahue et al., (2013) were based on surveys carried out in the U.S. and might not reflect what motivates residents on Koro Island to prepare.

As shown in Chapter 6.3, most of the respondents have expressed that they want to have training or receive information about preparedness. This is understandable and goes in line with the increased risk and preparedness awareness that was discussed in Chapter 7.1.1.1. Contradictory to the eagerness expressed, few of the respondents showed up when info regarding awareness was given. This gives the researchers an indication that the actual eagerness to be part of training or to receive information might be lower than expressed by the respondents. The respondents expressed an eagerness to receive information and training. However, it is unclear how they want this to happen and what type of training and what type of information that they believe is needed. One explanation for the expressed eagerness to have training or receive information might be that the respondents know that “yes” might be the “correct” answer when the question was given. Another explanation can be that the respondents believe that it is important to get training and/or receive information, but they do not believe that it is important enough to make them leave their houses when the opportunity is given. It should be highlighted that there might be underlying reasons for why people did not show up when information regarding awareness was given. According to some of the respondents, the news about that the organization was coming, was given to the villagers the same day as the organization arrived. This might have resulted in fewer people showing up. Also, some of the respondents expressed that they did not know that the organization had been in the village, which indicates a low communication level within the village.

Another possible explanation for why the people are not motivated enough to show up when training/information is given is due to no casualties in the village during TCW. This is relevant as the respondents highlighted their lives as the most valuable thing to protect. As discussed earlier, the respondents might have a false sense of security regarding preparedness, since they survived TCW. If believing that you will survive upcoming natural hazards, since you survived previous ones, and only valuing life, why show up for training? Since there were no deaths during TCW, the villagers protected the only thing they are afraid of losing. As such, villagers might not be motivated enough to show up for more training/information. The researchers believe that this is a factor that plays a vital role when explaining the villagers’ behaviour and perception. The researchers believe that the argument above is also valid for why the villagers do not prepare themselves to a further extent.

7.1.10 Accountability

During the analysing process of the collected data, it became clear that the respondents view on accountability affects their perception towards preparedness. This section contains discussion on how expectations on themselves and external help regarding accountability can affect the villagers’ perception and preparedness.

7.1.10.1 Internal expectations

The respondents who clearly argued for themselves being responsible for the family showed a greater awareness towards preparedness and risk, compared to the respondents who replied with brief answers regarding accountability for managing disasters. This is in line with earlier findings, which have shown correlations between ascriptions of responsibility and the level of preparedness. When people believe that they are responsible for their household preparedness, they tend to have a higher preparedness level compared to those who believe they are less responsible for their level of preparedness. People who feel less responsible has transferred the responsibility of safety to others, which causes a lower level of household preparedness (Corwin et al., 2017). The purpose of this field

study was to investigate the respondents' perception of preparedness, rather than their level of preparedness. However, observations showed that the respondents, who clearly stated that they were responsible for their household, tended to have had a greater level of preparedness compared to the majority of the village.

The villagers of Namacu believe that it was their responsibility to prepare for and manage any destructive event. The respondents who clarified that it was their responsibility to look after their family/household, tended to be males. It was also villagers among this group of respondents who felt a responsibility towards the elders and the villagers who had no family members on the island. Moreover, it was clear that the accountability extended from a household-level to a community/village-level among some of the respondents. They tended to feel accountable for themselves as there are no government officials on the island that would manage to take care of them. Therefore, if the villagers would not take care of themselves, no one would. This in line with previous studies that showed that locals tend to feel accountable for themselves where the government proactive measures are low (Bronfman et al., 2016).

Some of the respondents who have young children have clearly expressed that they are preparing for their children. They feel the importance of surviving in order to make sure that the children get well taken care of. This goes well in line with Hoffmann & Muttarak (2017), who states that a demographic characteristic that tends to do trigger preparedness is being married in middle-age groups and having children in the home.

7.1.10.2 Expectations on external help

As presented in Chapter 6.4.3, if necessary, the respondents expect to get help from the government or other organizations in the aftermath of an event. This is especially needed if the farms and crops are ruined. The fact that they only expect help after an event might partly be explained by that being the case after TCW. If the village would have been given help and support prior to TCW, the respondents might have replied differently. The respondents believe that the government and/or radio/news-stations are responsible to provide the villagers with awareness and warnings if a similar event is about to strike. This was also what happened before TCW, which might explain why the respondents hold them accountable in the future too. This phenomenon confirms how previous experiences plays a major part regarding the villagers' perception towards future events and accountability.

Researchers have pointed out when it comes to emergency preparedness there can be a danger connected to a high belief in governmental authorities. The argument is that the more residents trust the authorities, the less active the residents get (Enander, 2008). Findings revealed that the majority of the respondents were happy with the aid they received after TCW, both from the government and NGOs. In accordance with Enander's (2008) and Bronfman et al. (2016) findings, this counter-productive phenomenon, of counting on receiving aid after the event, can be an explanation for why the villagers do not tend to carry out any measures in their everyday life, such as saving money, that would benefit them when recovering from future disaster. This since they might be expecting the same good quality of aid after the next event. However, the respondents are planning on preparing once a warning is given and instead of relying on external help during natural hazards, the respondents rely on each other. The only external help that is expected is awareness and info before a natural hazard, and aid after an event if needed.

Namacu is located on the coast and the houses are in general only located a few meters above sea level. Due to this, it is highly possible that the consequences would be devastating if there would be a tsunami in the future, especially during night-time. Tsunami was in general not mentioned as a hazard which the respondents were worried about. Wachinger et al. (2013) underline the importance of trust in the authorities for improving the risk perception, especially when the knowledge about the hazards is lacking among the public. In this case, the problem does not seem to be lack of belief in the

government, but instead a combination of lack of training/information and the willingness among the villagers to attend the training and information sessions.

7.2 Signs of preparedness

The increased risk and preparedness awareness, shown in Chapter 6.2, has not resulted in an obvious increased preparedness in everyday life. Few of the respondents keep food and water in their houses for emergency. They are counting on that their farms will be able to provide enough food for them even though a lot of the farmland was destroyed during TCW. As an example, respondents have expressed that they ate wild cassava (type of crop) after TCW as they were low on food supplies. Some of the respondents highlighted that the villagers are not dependent on any supermarkets or such, since they have their own farms. In that sense, the villagers are more independent compared to people living in urban areas. It can also be argued that they are better prepared, or at least have a better ability to cope, than people who live in cities where e.g. supermarkets are vital for making sure that people fulfil their basic needs.

During the interviews, the villagers of Namacu explained that people from other villages came to Namacu to get water after TCW since other villages did not have drinking water. Some respondents have expressed that they now keep water in their house when a warning is given. Contradictory to this, some of the villagers instead gave the impression to have a higher belief in that the water will be enough and of proper quality if another disaster would strike. As such, since the water was good and enough TCW, some have increased their preparedness after experiencing TCW while others have an increased perception of preparedness. This indicates how some of the villagers base their preparedness level on what happened during TCW, and are therefore at risk of overestimating their own ability and preparedness.

Improving the tolerance of the house against hurricanes was the most common preparation measure that has been conducted after TCW, especially tying the roofs with ropes and rocks, see Figure 25-27 for images. For intense winds, these measures are appropriate. Observations on site showed that there were few preparation measures appropriate for other natural hazards than hurricanes. However, some villagers, whose houses were affected by the waves during TCW, decided to relocate their houses since it got destroyed. The residents' types of preparedness measures appear to be highly affected by TCW. This is understandable, not only because the destruction TCW caused, but also since hurricanes are the locals' biggest worries, as seen in Figure 8. The preparation measures connected to improving the tolerance of the house also shows how the villagers adapt based on previous experiences. It could be argued that the villagers should have a more holistic view and carry out measures that are not only appropriate for hurricanes. Noteworthy is that it is difficult for most of the villagers to make any measures that are costly, as money only plays a small part in the everyday life in the village. Therefore, with being aware of the low use of money, it would rather be surprising if costly preparation measures connected to other types of hazards than hurricanes, were being carried out.

As mentioned above, explanations that were given by the respondents to why mitigation measures are not being carried out to a further extent were mostly connected to lack of money. Attempts of trying to quickly increase the preparedness level by carrying out measures are noticed to be few, even though several of the respondents believe that strong hurricanes will strike in the upcoming years. Instead, the villagers have shown a low eagerness to increase their living conditions. They are clearly very adaptable to the new living conditions that were brought to them after the destruction caused by TCW. The pace in the village is slow and worries are few. Also, as mentioned in Chapter 6.2, many respondents have expressed that they perceive themselves as more prepared after TCW. However, what this perceived preparedness is based on is in many cases unknown. It can be correct that the previous experiences have resulted in an increased chance of surviving during future emergencies, but plans for how to deal with disasters in a recovery phase appears to be few. From observations, the

villagers appear to be more mentally prepared to cope with a disaster, rather than be better prepared for it.

It might be easy as a visitor in the village to state that the preparedness level is too low. When talking to the villagers, it became clear that the preparedness level before TCW was lower and that there were barely any strong houses in the village. With that in mind, it is easy to believe that the villagers had it coming and that it was just a question of time before a natural hazard would cause major destruction. Still, it is vital to have in mind that an event as TCW is unique and occurs rarely. Therefore, it needs to be emphasized that it might not be reasonable for a community, especially on a remote island, to be able to be prepared for it. Moreover, if a strong event as TCW would occur in a civilized western city, the researchers are positive that the damages would be devastating too. However, the villagers appear to be more tolerant since they have other values and needs. The researchers elaborate further on the villagers' ability to cope and recover in Chapter 7.3.

As discussed in Section 7.1.3, evacuation centre was one of the few things the villagers expressed that they were missing. It should be highlighted that some respondents did not only want an evacuation centre in order to stay in a strong building during a disaster. They also highlighted that it would be a good way to make sure that everyone in the village is safe. During TCW, the villagers were spread out in an early stage of the tropical cyclone. Respondents expressed that if there was a place that was predefined to operate as an evacuation centre, it would be easier to get an understanding of other villagers' status and location during a disaster. Even if there is a lack of funds to construct a building which only operates as an evacuation centre, there are plans on building a church. The church could operate as an evacuation centre during hurricanes. This has been mentioned by some of the villagers. The villagers could also have an assembly point to meet up at when a tsunami warning is given. From travelling around Fiji, the researchers have seen many assembly points, but in Namacu they seem to be missing. As such, the researchers believe that information regarding a safe assembly point, if a tsunami warning would reach the village, could be of great value. The fact that an assembly point is missing in the village, might be an indicator that confirms the villagers' lack of motivation of increasing their preparedness and response. This since it could be argued that setting up an assembly point could be of substantial value and an easy measure to organise. The reason for not setting up an assembly point could be that all the villagers survived TCW and they do not see the need to improve their ability further.

As stated above, some respondents have mentioned that the new church, located in the middle of the village, could operate as an evacuation centre during hurricanes. This since it is going to be the biggest and strongest building in the village. The researchers argue that the church would probably be a suitable place to relocate to during hurricanes. However, the villagers have shown a low knowledge and risk perception towards earthquakes and tsunamis, even though the area is prone to these hazards. With this in mind, when speculating in future natural hazards, the researchers want to highlight that future use of the church as an evacuation centre, during other natural hazards other than hurricanes, could be dangerous. This since the waves from a tsunami could reach to the point of where the church is to be built. During the Great East Japan Tsunami in 2011, a gym that was a designated evacuation building got overwhelmed by the tsunami and more than 70 people died (Suppasri, o.a., 2013). With this in mind, the researchers find it important that the villagers get a better understanding of how to handle different types of natural hazards, not only hurricanes.

As shown in Chapter 6.5.2, some of the respondents have expressed that the casualties on Koro Island would have been much higher if TCW would have struck night time. This goes in line with the researchers' understanding. Also, the researchers argue that the need for an assembly area in such a case is high. As the village, during night time, is really dark it is presumable that the confusion around people's locations would be high. The fact that the villagers realize the possible consequences if a similar event would happen during night time, is showing an awareness regarding the risk. However, there are no signs showing that any actions are carried out to decrease the risk of such an event. This is

a reoccurring tendency during the field-study, the villagers show awareness, but the actually conducted measures are not close to being equal to the awareness they are expressing.

7.3 Ability to cope and recover

The researchers find the ability to cope with a disaster as high. Even though the village is still badly affected TCW and many of the villagers still live in temporary houses, there are no major concerns and no big attempts to hurry the recovering process. The researchers believe that the process and urge of getting back to “normal” would be bigger in a more developed society. It should also be understood that what counts as “normal” can be perceived differently in different societies and places. If “normal” living conditions are low in terms of wealth and robustness, and knowledge about societies are low, it is understandable that the recovery process is slow and demands are short.

A possible explanation for the islanders’ mentality and behaviour could be that they are satisfied as long as they and their family are still alive. There is no tendency showing that people are eager to have a recovery plan that would come to use after a disaster. Few respondents spoke about carrying out measures in their everyday life, such as saving money on the bank, which would come to use after a disaster. The tendency is instead that the villagers are satisfied as long as they outlive the disaster. This combined, emphasizes why the villagers show such a capability of coping with disaster. It should be highlighted that if an event would occur, and their farms would be intact, the villagers believe that they will be able to cope and survive for an extended period of time. The villagers tend to estimate that they will be able to survive for several months with the available food and water on the island. This can be compared to Swedish citizens, who are believed, by officials, to be able to cope with the household needs concerning water, food, heat, and information for a maximum time span of 24 hours (Asp, 2015). Note that studies carried out by Donahue et al., (2013) shows that people think they are better prepared than public officials think people are.

Despite the general behaviour of not carrying out preparations measures on a daily basis, some of the respondents have highlighted that they understand that it is important to save money in the bank, even though many of the locals received money from relatives outside of Koro Island after TCW. The researchers believe that the villagers are not saving any money because of lack of money in their society. This since the village life they live, compared to urban areas, have a low dependency on money. This leads to the villagers not focusing on earning money to the same extent. Further explanation is that the villagers simply do not think it is worth putting money in the bank for an increased ability to recover. This since they are satisfied as long as they and their family survive the event, and are not concern about the recovering phase.

A noteworthy observation is that the houses in the village before TCW were cheap and not of robust building material and construction. The foundation of the house appears to be the most expensive part of the house. Since most of the foundations were still left after TCW, it is understandable that a lot of the houses are being rebuilt in the same places since the savings among the villagers are low. It is easier and cheaper for the villagers to just rebuild the house in the same spot. As mentioned earlier, the respondents express that stronger houses are needed. However, the recovery phase is slow, and it will take a long time before the majority of the houses in the village will be stronger than they were before TCW.

The villagers appear to have a deep trust in the village. The community they live in has been the same for a long time. The elderly in the village have informed the researchers that the village used to be more populated but when speaking to the villagers it has become clear that they all love Koro Island and the freedom of living on the island. Since the needs are few and people appears to be happy even though TCW brought heavy destruction to Koro Island, it might be wrong to try and change their mind-set towards preparedness. The researchers can only speculate on this complex topic but maybe an increased knowledge about natural hazards and preparedness would only result in worries and less freedom for the islanders? With this in mind, the researchers argue that focus should be on enhancing

preparedness capacities connected to what the residents' value. From the results, this can be measures connected to the construction of stronger and more robust buildings.

7.4 Possible factors affecting outcomes of future hazards

As Fiji and Koro Island is prone to natural hazards, it is a question of time before next event will strike the islands. This section contains a discussion about some of the factors that may affect the outcome of future hazards on Koro Island.

7.4.1 Values and working locally increase possibility to evacuate if warning given

Studies in the aftermath of the tsunami in Japan 2011 revealed that people with experiences from earlier tsunamis failed to self-evacuate during the tsunami. The main reason for people failing to evacuate can be explained by that people were staying home and waiting for family members. Another common reason was that people did not evacuate immediately since they wanted to collect and bring their most precious belongings. In order to avoid these cases, the authorities have promoted and encouraged people to self-evacuate without waiting for family members and taking any belongings (Suppasri, o.a., 2013). When speculating in what would happen if a sudden tsunami or any other natural hazard without any warning or very short notice would reach Koro, it is not expected that the same problem as in Japan would occur. The researchers base this on the fact that people strongly highlight that life safety is the only thing that matter in case of a disaster. Also, it has become clear when asking questions regarding immediate evacuation, that people would run towards safety without grabbing any stuff. The above combined shows how the values differ when comparing Koro Island to places that are more developed and civilized. Moreover, how the various values affect the evacuation process. It should be highlighted that from the researchers' observations, most of the villagers, in their everyday lives, have a tendency to be staying around the village or very close to the village even during the day when working. As such, if people, in contrary to what is expected, would choose to wait for other family members before relocating, the time until everyone in the household is gathered is expected to be low.

7.4.2 Low probability of early evacuation

The arguments and considerations above are based on the villagers being warned before any tsunami or other sudden event occurs. However, there are no types of early warning systems in Namacu, Koro Island. The warning procedure is that government officials in Nasau, which is another village on Koro Island, will be warned by officials on the main island and are then supposed to warn all the 14 villages on the Koro Island. During previous events, such as TCW, this was done by government officials from Nasau, who drove around the island. As understandable, the warning procedure can be expected to be time-consuming, especially during night time. During the well know 2004 Indian Ocean earthquake, the Pacific Tsunami Warning Centre in Hawaii informed about the earthquake 15 minutes after the occurrence of it. No early warning system existed in the area around the Indian Ocean, and as such few warnings were given to the population. The area where the tsunami in 2004 occurred is prone to earthquakes but few major tsunamis had been reported before the tsunami in 2004, which is similar to Koro Island and Fiji. The waves reached the coasts of Indonesia as soon as 15 minutes after the earthquake (Nationalencyklopedin, 2017). The researchers argue that if a similar event would occur on Koro Island, the probability that the villagers would receive a warning, before getting hit, is low. This would most likely result in devastating consequences. The researchers also want to highlight that the villagers tend to have the radio on during the day, it is however unclear how useful the radio will be, depending on if anyone is listening to the radio and how quickly the warning will reach the news.

Surveys after the Great East Japan Tsunami 2011 showed that most of the people in the cities evacuated quickly. The knowledge and experience around tsunamis in those cities are high (Suppasri, o.a., 2013). When speculating if the villagers in Namacu would evacuate fast in case of an earthquake, the answer is probably no. Despite asking any direct questions regarding the villagers' plan, if there would be an earthquake, the researchers believe that most of the villagers would not think about evacuating to a higher area if an earthquake would occur. The low preparation and risk perception

towards tsunamis and earthquakes was surprising to the researchers. However, it confirms what the respondents expressed about their perception of hurricanes before TCW, which revealed that they are not worried about a hazard they have not yet experienced.

8 Conclusion

This study has shown that most of the villagers, living in Namacu, Koro Island, are only concerned about hurricanes and no other natural hazards. Several factors are affecting preparedness towards natural hazards, such as *previous experiences*, *local knowledge*, *values*, *overestimating own ability* to name a few. *Previous experiences* are the most prominent identified factor that affects the residents' perception and preparedness towards natural hazards. This is mainly because of Tropical Cyclone Winston (TCW), which had severe consequences for the villagers on the island. More than 18 months post-event, there are still many signs from TCW in the village which reminds the villagers of the devastating event.

Except for a few houses which are being built stronger, there are barely any signs of mitigation or preparation measures being carried out on a daily basis. However, the villagers reveal that they will carry out preparation measures as soon as a warning is given. When a warning is given, the residents plan to prepare food, clothes, and water. Despite the current living conditions and the estimation of a strong hurricane striking in the upcoming ten years, the villagers are confident that Koro Island and Fiji is a safe place or even the safest place in the world.

Few signs of measure that would benefit the recovering process, such as saving money, have been noticed in the village. A potential reason for why the villagers do not see the worthiness in conducting measures that will benefit them in the recovering phase might be that they estimate that their farms can provide them with food for several months. This ability differs in comparison to people who are living in urban areas where people are dependent on a constant supply of food. This is a potential reason that partly explains why the villagers can show great skills in coping with the aftermath of a devastating event.

The villagers see themselves as responsible for preparing and taking care of themselves during a natural disaster. This is as there are no government officials on the island who would manage to take care of the villagers. The accountability extended from a household-level to a community/village-level among some of the respondents, mainly middle-age males who were responsible for the household. It was also the villagers within this group of respondents who felt most responsible towards the community and its members.

Prior an event, the villagers believe that the government is accountable for making sure that the villagers receive warnings and awareness. When necessary, the respondents expect to get external help in the aftermath of an event. This is especially needed if their farms and crops are ruined.

When asked, the respondents highlight, that they are motivated to increase their household preparedness. This "eagerness" does not match their actions taken when information and training were given. This could be explained by the fact that there were no casualties in the village during TCW. Since there was no loss of life, the villagers were able to protect the only thing value. Due to this, combined with their ability to cope, the researchers believe that the villagers do not see the need of making any drastic improvements in their preparedness. It can only be speculated whether the villagers would carry out further measures if there would have been casualties in the village.

None of the respondents have expressed that they would like to live anywhere else. The calm, easy, and peaceful village-life is something the villagers' value and it is a possible explanation for the low willingness of development. The observation that they appear content with their current living situation might be a potential reason for why the villagers do not see the need to make any sudden improvements. Whether this slow pace is unique for Koro Island is debatable, however it differs a lot in comparison with more developed societies.

The villagers show a great ability to cope with disasters in terms of saving their lives and continue living the lifestyle they value. An explanation for this is that the villagers only value their life. Since

the villagers only value their lives, they are satisfied as long they outlive disasters. Due to this, the people are planning on carrying out preparation measures that will increase their chances of surviving the event.

Additionally, the villagers' risk perception- and preparedness awareness towards hurricanes has increased after previous experience. Before TCW, the villagers did not worry about natural hazards and did not take warnings seriously. The increased risk perception- and preparedness awareness does not correspond to actions taken by the respondents since few measures are being carried out on a daily basis. The researchers believe that the villagers might experience a false sense of security towards natural hazards since they were fortunate that TCW took place during daytime and that all the villagers of Namacu survived.

Before TCW, when warnings were given, the villagers did not prepare much, but still managed to survive and protect their lives. In comparison to before TCW, the villagers are now expected to be equal or slightly better prepared if getting hit by an event that gives them time to prepare. However, if an event would strike without any warning, the villagers appear to be equally or less prepared compared to before TCW.

The knowledge about natural hazards, other than hurricanes, is low. The results reveal how the risk perception towards other natural hazards is lacking since the villagers mostly experience hurricanes.

Providing the villagers with information and education about various types of natural hazards could increase their awareness towards these. However, by doing so, it is possible that it might lead to distress for the villagers. If no external information is provided to the locals, the researchers argue that their awareness, and risk perception, will only increase when they face the damages which the next disaster might bring them. As such, in order to increase the villagers' preparedness without affecting their lifestyle, the researchers argue that measures carried out should be based on the villagers' values. Efforts that focus on their existing preparedness capacities, such as building stronger houses, can be combined with new capacities such as evacuation training. These are preparedness measures that should increase the villagers' preparedness without having a great impact on their lifestyle.

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10 Appendix A – Interview Guide

All interviews started with an initial focus on familiarising with the interviewee in order to get the interviewee to feel comfortable. Researchers started by gratefully thank the interviewee for taking time to participate. Researchers explain ethical principles (anonymity etc.), presents themselves, and purpose with study.

After the initial phase the researchers start asking questions regarding age, occupation, size of household and the responsibility within household in order to get a greater understanding of the interviewee.

The researchers started then focusing on preparedness where the interviewee is expected to answer the questions below. Note that the questions were not necessarily asked in the order below. When the respondents said something that was out of interest, the researchers accustomed and replied with proper follow up questions that are not mentioned below.

Understanding of concepts

- What are sudden natural hazards to you?
- Have you ever thought about preparedness and what it means to you?

What's the likelihood of disaster striking?

- What are your main concerns about living on Koro Island?
- Do you think the area is prone to natural hazards? If yes, which ones?
- Is it likely that you will get affected by natural hazards in the upcoming 12 months, 5 years?
- Are there any type of natural hazards you are dependent on?

What is important to protect from disaster?

- What do you value and is most important to protect most?
- What are your most important needs?
- Do you own your house, property, or any land nearby?
- Do you consider possible occurrence of natural hazard when deciding where to live or put your house?

Personal preparedness overall

- Which sudden natural hazards are you most concerned about and why?
- Do you feel prepared to deal with these disasters?
 - What makes you feel prepared/not prepared?
- Do you focus on any specific disasters?
- Have you taken any precaution measures for these disasters? Which? Why/why not?
- How long can you cope when it comes to food and water? Can you show us your supplies?
- Do you believe it is your responsibility to handle your household during a disaster?
- Are you motivated to increase your household preparedness?

- What would motivate you to increase your household preparedness?
- Have you had any training for response activities?
- Have you discussed preparedness with other people in your community?

Who can you rely on in case of disaster?

- Do you have any expectations on external help (government or authorities) when it comes to help during and immediately after emergencies?
- Have you received any information on what to do in case of an emergency?
- Would you like to get more information about how to prepare and what to do in case on an event striking?

Are you aware on what to do in the event of a disaster?

- In case of emergency: Do you know what to do in case of an emergency? If you are home? If you are out of your home? Do you think about escape routes within the house for when an event occur?
- Do you know where you would escape to if you cannot stay in the house?
- Do you know the escape routes to that place?

How has previous events changed preparedness level?

- Have you experienced any previous disasters/dangers? Which and when?
- How do you remember these? How did you handle the disaster? Did you have enough food and water?
- Have you made any changes since?
- How would you cope with a similar event today?

11 Appendix B – Images



Figure 22: House rebuilt after TCW



Figure 23: Destruction caused by Tropical Cyclone Winston



Figure 24: Temporary church



Figure 25: House rebuilt according to instruction from organizations



Figure 26: Rope and rock being used for keeping roof connected to house during hard winds

12 Appendix C – Nvivo

What kind of sudden natural hazards do the residents' prepare for and how do they prepare	0	0
Preparation measures when warning is given	22	77
Relocation	9	13
Prepare house	10	25
Warn others	3	3
Food, water and clothes	15	35
Preparation measures in everyday life	26	77
Relocation of house	9	14
stronger buildings	15	27
Listening to news and radio	3	5
Rebuild house in same location	14	18
Food, clothes and water	7	8
Miscellaneous	5	5
Time to cope for household	0	0
Type of hazards that is a concern	19	38
Waves	2	2
Tsunami	3	4
Flooding	1	1
Flooding unables crossing river	1	1
Only God knows	1	1
No trees left to provide protection	1	1
Natural hazards in general	2	2
Hurricane	16	26

Figure 27: Screenshot of NVivo, sub-question Nr.1

What are peoples' perception towards accountability for preparedness	0	0
Expectations on themselves	0	0
feeling responsible for household during disaster	14	23
feeling responsible preparing household	12	18
Expectations within village	0	0
expecting help from others within village during or after disaster	3	3
Feeling responsible for others in village	7	15
Others in village knows their responsibility	2	2
The village has a responsibility for preparing	4	8
External expectations	0	0
Expectations for preparing	0	0
expecting external help during or after disaster	8	8
External help aware of their responsibility	6	6
High belief in external help	2	2
Type of expectations	0	0
Level of urgency for help	0	0
Responsibility to arrange training	0	0
Administration in school	1	1
Government	2	3
Headman	4	6
NGOs should do it better	1	1

Figure 28: Screenshot of NVivo, sub-question Nr.2

What motivates the households' to improve their level of preparedness	0	0
Important needs and values	0	0
Needs	24	49
Community	2	3
Household	13	17
Life safety as number one	17	24
Money	3	4
Need to go to Suva to repair stuff	1	1
Needs missing	12	31
Evacuation centre	10	15
First aid kits	1	1
Knowledge about how build a strong house	1	2
Money	6	11
Nurse on both side of river	1	1
Window shutters	1	1
Training	0	0
Had training or not	0	0
No need for training	2	2
Opportunity to attend training	0	0
Wants to have training when asked	20	20

Figure 29: Screenshot of NVivo, sub-question Nr.3

How has previous disasters affected their perception towards natural hazards	0	0
Increased risk perception and preparedness awareness after experience	23	83
Increased preparedness awareness after experience	21	54
Awareness due to family members when growing up	1	1
Awareness due to military	1	1
From participating in interviews	1	2
Listening more to radio and news	1	1
Taking warnings more seriously	6	9
Increased risk perception from experiences	14	29
Based on news	1	1
Highlighting higher risks during night	3	3
Highlighting tap can break during landslides	1	1
No change or decreasead risk perception and preparedness after experience	5	7
decreased risk perception after experience	2	3
No change in preparedness after experience	4	4
perceived increased preparedness after experiences	14	17

Figure 30: Screenshot of NVivo, sub-question Nr.4