

Climate Risk Communication in Tourism Destinations in Siruma, Camarines Sur, Philippines

Mariel R. Estrella

Partido State University, Goa, Camarines Sur, Philippines

DOI: <https://doi.org/10.47772/IJRISS.2023.70620>

Received: 17 April 2023; Revised: 17 May 2023; Accepted: 20 May 2023; Published: 20 June 2023

ABSTRACT

Climate risk communication is an important early warning tool for an upcoming disaster. It prepares the locals to decide and act appropriately to save lives and properties. This study primarily described climate risk communication in tourism destinations in Siruma, Camarines Sur. Specifically, it aimed to 1.) identify the sources and severity of risks in tourism in the locality, 2.) find out how these risks are communicated in the locality, 3.) determine how the locals perceive these risk communication measures, and 4.) recommend some measures to improve risk communication. Using Qualitative Research Design, data were gathered through Focus Group Discussion and Key Informant Interview. Seventeen (17) participants shared their experiences, thoughts, and opinions on climate risk information, risk communication strategies, problems encountered, and risk perception. FGD result shows that the four risks experienced by the locals for the last five years were typhoons, heavy rainfall and flooding, storm surge, and temperature extreme which is El Nino phenomenon. The most severe at level 4 was Typhoon Ulysses in 2020. The primary source of the climate risks are the Local DRRM Officer in coordination with Barangay Officials and the Philippine National Police through house-to-house visits and two-way radio. It was observed that despite the abundance of risk information, some locals refuse orders for preventive evacuation mainly because they do not perceive the risk due to some not credible sources and unpersuasive messages. Focused and directed risk communication messages can help them perceive upcoming risk to behave positively. The study recommends that LGU Siruma may draft and implement a Climate Risk Communication Plan that will include communication strategies using various media with focused messages, skills trainings on communicating risk messages, trainings on value formation, and enhancing internet connectivity in Siruma.

Keywords: Climate Risks, Risk Communication, Risk Perception, and Behavioral Change

INTRODUCTION

Tourists travel for varied motivations, destination choices, and personal preferences on travel time in a year. While on travel, safety and security are their utmost priority. But nature's wrath cannot be predicted all the time nor can it warn people. This can result to damage or loss of lives and properties of both tourists and the locals. The best way of communicating the risks to tourists at the right time is critically important.

Risk communication is defined by Lang et al. (2001) as any purposeful exchange of information about risks between interested parties. In the context of disasters, risk communication is getting across meaningful, accurate, and effective messages before and during the disasters. In relation to this, the Centers for Disease Control and Prevention (2014) produced the Crisis and Emergency Risk Communication Manual which defines the six principles of effective crisis and risk communication. These are 1) be first, 2) be right, 3) be credible, 4) express empathy, 5) promote action, and 6) show respect. CDCP further stressed that in crisis situation, time is crucial and quick communication of relevant information is important to save lives and

address public fears. Risk communication is so vital that it creates awareness about the climate risks and it leads to making informed decisions. Ngo (2021) citing Whitmarsh 2008; Poortinga et al. 2011; Ockwell, Whitmarsh, and O'Neill 2009; Ngo, Poortvliet, and Feindt 2020 mentioned that the “efforts to communicate flood and climate change risks without understanding risk perception are ineffective, because direct experiences influenced individuals’ knowledge, attitudes, risk perception and behavioural responses to climate change.” (Ngo 2021, p15)

Siruma is a 4th class municipality in the 4th District of Camarines Sur with a recorded poverty incidence of 59.18% in 2015. (<https://en.wikipedia.org/wiki/Siruma>). It lies at the topmost of Partido area facing San Miguel Bay and the Pacific Ocean. With its strategic location, it is endowed with pristine beaches and panoramic and breathtaking landscapes that are getting popular to local and foreign tourists. Amidst these captivating sceneries lie the hazards that expose them to risks like typhoons, storm surge, and flooding.

It is in this context that this project was conceptualized. This study attempted to identify the sources and severity of risks in tourism, find out how these risks are communicated, and determine how the locals perceive risk communication measures. Eventually, this will recommend some measures to improve risk communication in tourism in Siruma, Camarines Sur.

OBJECTIVES

General objective The primary objective of this study was to describe climate risk communication in tourism destinations in Siruma, Camarines Sur.

Specifically, the study aimed:

1. To identify the sources and severity of risks in tourism in the locality;
2. To find out how these risks are communicated in the locality;
3. To determine how the locals perceive these risk communication measures; and
4. To recommend some measures to improve risk communication in tourism in Siruma, Camarines Sur.

METHODS

The study used descriptive research design and Focus Group Discussion, Key Informant Interview, and observation. Respondents of the study were the tourism stakeholders such as the resort owners, tour guides, boatmen, food servers, transportation providers, souvenir makers, peace and security, and some locals. In addition, the local officials of Siruma such as the Local DRRM Officer, Tourism Officer, Municipal Planning Officer, and the Municipal Agricultural Officer (MAO) were invited. Primary and secondary data were used in the study. Primary data were those generated from the FGD session, and KII. Secondary data were taken from references and some internet sources relevant to the study. No secondary data from LGU Siruma such as the Municipal Tourism Development Plan (MTDP) other tourism related documents were used as a secondary data.

The study used the Participatory Action Research (PAR) which can be traced from the works of Paulo Freire and others in Latin America which emphasized on participation, capability building, ownership of knowledge and empowerment. It is basically an extractive and intellectual exercise in the local communities to bring real, visible organizational structures, effective local advocacy, and a durable change in power relations. The experience of IISD showed that the PRA approach has the most potential of all the methods described to secure the resources for sustainable livelihoods. Charles and Ward (2007) likewise traced the origin of PAR and its growth in the 1980s to 1990s. PAR poses great challenges in the academic researches but it offers a wide range of learnings from the experiences of researchers as seen in the growth

of qualitative researches, the postmodern and poststructuralist growth, and social theory.

Specifically, Focus Group Discussion (FGD) and Key Informant Interview (KII) in Siruma were the data gathering procedure. Participant observation was likewise used to triangulate the findings in FGD and KII. Seventeen (17) key informants attended the two FGD sessions.

Focus questions were prepared by the researcher. Informal interview was done with three tourism stakeholders in the community and LGU Siruma. The Technology of Participation (TOP) approach was used to determine the perception of locals on risk communication measures, and how to improve risk communication in Siruma, Camarines Sur. Data analysis was through a qualitative approach. Themes were derived from the responses of the respondents of the FGD and KII. Insights and implications were drawn based from the responses

RESULTS

The study primarily described climate risk communication in tourism destinations in Siruma, Camarines Sur. Specifically, it aimed to: 1.) identify the sources and severity of risks in tourism in the locality; 2.) find out how these risks are communicated in the locality; 3.) determine how the locals perceive these risk communication measures; and 4.) recommend some measures to improve risk communication in tourism in Siruma, Camarines Sur.

This research focused in Siruma, Camarines Sur, being one of the emerging tourism destination in the Bicol Region.

The UN Inter-Agency Secretariat of the International Strategy for Disaster Reduction (UN/ISDR) in 2006 in their proceeding with the title *Developing Early Warning Systems: A Checklist* stated that there are four key elements in disaster risk reduction. These are risk knowledge, technical monitoring and warning service, communication and dissemination of warnings, and community response capability for an effective people-centred early warning system. Among these elements, Risk information and Risk communication and dissemination are discussed in this study.

Sources and severity of risks in tourism in the locality

Siruma lies at the topmost part of Partido area and its boundary at the northeast is the Pacific Ocean. It is also surrounded by San Miguel Bay, Siruma Bay, Sapinitan Bay, Butawan Bay, and San Vicente Bay. This location exposes Siruma to four climate risk sources.

Risk Information

The hazards and vulnerabilities pose risk in Siruma, Camarines Sur. This section assesses the risk information to study the dynamic nature of hazards and vulnerabilities.

FGD results showed that for the last five years, the identified climate risks are typhoons, heavy rainfall and flooding, storm surge, and temperature extreme which is El Nino phenomenon. Of these, the most felt were the typhoons. The Asian Development Bank in 2018 affirmed this findings that among the climate risks sources in the Asia and Pacific region, to which the countries are highly vulnerable, are temperature extremes, flooding caused by heavy rainfall, sea level rise, and tropical cyclones. These sources are further heightened by the rapid increase in population and the modernization of urban areas.

Table 1 shows the strong typhoons that hit Siruma for the last five years. According to the FGD participants, the strongest was Typhoon Ulysses with a severity level of 4. Typhoons Rolly, Quinta, and Agaton were

level 3. The rest were at level 2.

Table 1. Typhoons and their perceived severity in Siruma, Camarines Sur.

Date	Typhoon (Local and international name)	Severity
December 16, 2021	Odette/Rai	2
November 11-12, 2020	Ulysses/Vamco	4
November 1, 2020	Rolly/Goni	3
October 26, 2020	Quinta/Molave	3
December 2, 2019	Tisoy/Kammuri	2
December 25, 2018	Agaton/Usman	3
September 16, 2018	Ompong/Manhut	2

Perceived Severity of Typhoons

The severity of tropical cyclones is technically classified by PAGASA according to the strength of the associated winds. This is in terms of maximum sustained winds. As of March 23, 2022, this is the classification: 1.) Tropical Depression. This is a tropical cyclone with maximum sustained winds of up to 62 kilometers per hour (kph) or less than 34 nautical miles per hour (knots) . 2.) Tropical Storm is a tropical cyclone with maximum wind speed of 62 to 88 kph or 34 – 47 knots. 3.) Severe Tropical Storm is a tropical cyclone with maximum wind speed of 87 to 117 kph or 48 – 63 knots. 4.) Typhoon is a tropical cyclone with maximum wind speed of 118 to 184 kph or 64 – 99 knots, and 5.) Super Typhoon is a tropical cyclone with maximum wind speed exceeding 185 kph or more than 100 knots.

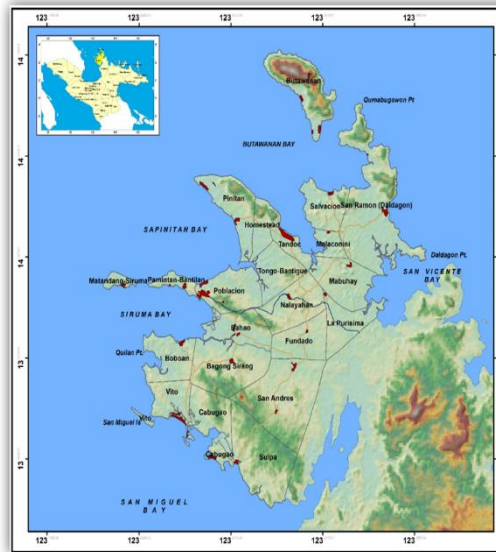
For the purpose of this study, “perceived severity refers to an individual’s subjective perception of the magnitude of a threat or risk.” (Ngo 2021, p.20) To further concretize and put into images the concept of perception of participants, the researcher devised a classification on the severity of typhoons according to the extent of damage caused to lives and properties. Thus, the term perceived severity was classified based on the description of Levels 1 to 5.

FGD result shows that from the typhoons, the participants all agreed that Typhoon Ulysses was the strongest at level 4. This was followed by Typhoons Rolly, Quinta, and Agaton at level 3. At level 2 were Typhoons Odette, Tisoy, and Ompong. The participants narrated their experiences with typhoon Ulysses where almost all houses lost their roofs and only few trees remained standing. The locals seemed hopeless because they have to start all over again. But they thanked God that their family were safe and no one died.

The second climate risk experienced by the locals during rainy season is the heavy rainfall that leads to flooding. This happens from July to December. According to Marcelo Villafuerte, the Asst. LDRRMO of LGU Siruma,

Flooding is felt specially in low lying areas of Siruma. The barangays affected by flooding due to heavy rainfall are Bahao, Salvacion, Sulpa, Vito, and Boboan. This also includes the 12 coastal barangays inhabited by the locals.

Figure 1. Map of Siruma, Camarines Sur.



Source: LGU Siruma

FGD result shows that storm surge is another risk experienced by the locals. Storm surge is defined as the abnormal rise in seawater level during a storm, measured as the height of the water above the normal predicted astronomical tide. The surge is caused primarily by a storm’s winds pushing water onshore. The amplitude of the storm surge at any given location depends on the orientation of the coast line with the storm track; the intensity, size, and speed of the storm; and the local bathymetry or the ocean’s depth relative to the sea level.” (National Ocean Service 2022, p. 1)

In the Philippines, it is known as “Daluyong ng Bagyo” caused by strong winds and the low atmospheric pressures by typhoons. As the tropical cyclone approaches the coast, strong winds push the ocean water over the low-lying coastal areas, which can lead to flooding. This endangers occupations, water, food, shelter, and roads. (Villafuerte, 2021)

The coast of Siruma is vulnerable to storm surges. When that happens, it can affect the 12 coastal barangays namely: Butawan, Salvacion, Tandoc, Homestead, Penitan, Poblacion, Matandang Siruma, Boboan, Pamintan Bantilan, Sulpa, Cabugao, and Vito. For the past 5 years, the FGD participants remembered only 1 storm surge that happened where the peak water level reached to as high as 8 meters. This resulted to extensive flooding and damage to properties.

Incidentally, while the FGD participants fear storm surge, they can be guided by PAGASA. PAGASA mentions some technical factors when predicting negative impacts of storm surge in prone communities. These are: 1.) strength of the tropical cyclone; 2.) height of the surge; and the 3.) communities located in low-lying areas. With this information, the locals can avoid negative impacts on their lives and properties. Specifically, checking weather updates from whom they consider “reliable” would be very helpful. They can also prepare important things they need and prepare to evacuate to a non-prone area with higher elevation.

El Nino is another climate risk in Siruma particularly for rice farmers. According to Normelita Mirana, a food entrepreneur in the community,

We experienced El Nino sometime in 2019. It lasted for about nine months. During El Nino, the rice paddies dried up and farmers practically had no rice produce and they were bankrupt of their small capital.

Luckily the locals did not experience any landslide because by nature, Siruma has no mountainous land area that can be affected by heavy rainfall.

Who are at risk

FGD results show that when climate risks happen, the groups that are at risk are the people, facilities, and the last are the lifelines. The people at risks are the guests/tourists/visitors, resort owners and other businessmen, and the locals living in the area. Facilities that are at risk are the infrastructures such as roads going to Siruma, potable water source, and cottages in the resorts. The lifelines affected are the health workers, PNP, those bringing in food supply to evacuees and the suppliers in various businesses. The lifelines claimed however that the risks are only during the disaster. After that, they are fully aware of how to reach Siruma safer.

How these risks are communicated in the locality

Risk communication

How climate risks are communicated and who communicates them in the most pressing and crucial situation are important part of this study. The source and the medium used for dissemination has an effect on risk perception and in accepting the climate risk.

The Focus Group Discussion was a way to get qualitative information and understand the source, medium, and some issues related to risk communication. The participants affirmed that in Siruma, whenever a climate risk is about to happen, the locals are informed. Specifically, FGD results show that whenever a typhoon is coming, the risks are communicated by the Local DRRM Officer in coordination with Barangay Officials. They are the primary source of messages. The LDRRM Officer and the officials use house to house visit to inform them of the typhoon and possible storm surge. They persuade every household to transfer to the designated evacuation area. The Philippine National Police (PNP) supports the LGU by helping in the dissemination of information. They use the two-way-radio in communicating with the locals which is a very helpful gadget during disasters.

FGD participants claimed that second source of climate risk messages are the social media like FB, and messenger and text messages of the National DRRM Officer. These are the fastest sources of messages.

The third source of climate risk messages is Mr. Mike Padua. Mr. Padua is the so-called Mr. Typhoon in Naga City. The FGD participants know that he is not a resident meteorologist of PAGASA yet the locals believe him more than PAGASA. Mr. Padua took up BS Geography instead of BS Meteorology which is not available in schools in Naga City. He continued developing his skills by attending conferences both here and abroad, scanning the latest research and models, and using the most advanced technologies. He does plenty of research. For Mr. Padua, "Education is not a four-year course. It is a continuing study on the new knowledge that you get". Studying should be continued in order to be able to attain new knowledge, and ultimately, save lives.

Despite the little trust of the locals to PAGASA, it is still recognized as the fourth source of climate risk messages. However, over the years, they found it to be not so accurate and reliable. The respondents verbally expressed their mistrust and this was observed in their expressions shaped by their past experiences on typhoon advisory. They doubt every typhoon advisory issued by PAGASA; instead they believe more the advisory of Mike Padua.

This relates to the principles of effective crisis and risk communication described by the Centers for Disease Control and Prevention (2014). To have an effective risk communication, the six principles to be observed

are : 1.) be first, 2.) be right, and 3.) be credible, 4) express empathy, 5) promote action, and 6) show respect. PAGASA has to be on top of it all because its primary mandate is to “Provide adequate, up-to-date data, and timely information on atmospheric, astronomical and other weather-related phenomena using the advances achieved in the realm of science to help government and the people prepare for calamities caused by typhoons, floods, landslides, storm surges, extreme climatic events, and climate change, among others, to afford greater protection to the people.” (PAGASA 2022, p.1)

Interestingly, the fifth source are the locals themselves. Once they are certain of the risk, they use the “bandilyo”, an early form of disseminating messages to all locals. Bandilyo uses a big gong and the group of informants go around the barangays in a loud voice announcing the upcoming typhoon. This indigenous form of communication is still practiced in Siruma.

At rank 6 is the neighbors. The women tend to gather together on the sari-sari store or on the street, and through word of mouth, they gather and spread information about the climate risk. Gathering risk information from this source heightens their fear of the upcoming climate risk.

The seventh source are the mainstream media, particularly the radio and TV. This is used however while there is an electricity. The news coverage are not depended upon because they get off the air once the electricity is cut off.

Lastly, the participants stated that most of the time, a combination of the above makes them aware of the upcoming risks.

Table 2. Manner of disseminating climate risk messages in Siruma, Camarines Sur.

Who disseminates climate risk	Mode of dissemination	Rank
Local DRRM Officer in coordination with barangay officials And Philippine National Police (PNP)	House-to-house Two-way radio	1
Social media (like FB and messenger) National DRRM Officer	Posts and text messages	2
Mr. Mike Padua	Radio	3
PAGASA	Radio and TV	4
Locals	Bandilyo	5
Neighbors	Word of mouth	6
Mainstream media	Radio and TV	7
Combination of 1 and 2	Any of these modes	8

Wardekker (2004) stressed the importance of a credible and trusted source for risk communication. In his study, the citizen seems to trust the scientists including the internet, TV networks and newspapers. Similarly, in this present study, the locals find the text messages from NDRRMO, use of internet, and social media as very reliable and dependable. Radio and TV cannot be relied upon especially when the power is out. This is supported by FAO and WHO (1998) that stated that one of the principles of risk communication is to involve scientific experts. As experts, they can explain the concepts and processes of risk assessment and the scientific data, assumptions and subjective judgments upon which it is based. In effect, the risk managers clearly understand the risk and how the risk management decisions are made. This is true in Siruma where they trust more Mr. Mike Padua than PAGASA. The principle of credibility influences the public perception of a risk. People will understand the nature of the hazard, culture, social and economic

status, and other factors. It is said that when same and consistent messages are received from different sources then the credibility of the message is reinforced. Some factors that determine credibility include recognized competence or expertise, trustworthiness, fairness, and lack of bias.

A compelling view on risk communication is to think of it as an invaluable tool for fostering trust, and helping the locals make informed decisions. Bertram (n. d.) stated that Risk Communication and Community Engagement focus on informing and engaging the public on how to reduce their risk and better protect themselves. Although the study was on health risk, the same can be said in climate risk. The concerned LGU officials must remember to use strategic behavior change approaches to motivate action. With this LGU Siruma can prepare plans to control climate risks in their locality.

It appears, however, that most climate change information are not readily usable to policy makers, vulnerable groups, and other stakeholders. The climate information are not answering the need to make decisions and are only presented on spatial and temporal scales. Certainly, these information cannot be understood by the locals. Consequently, framing and developing understandable messages in climate risk communication is very important. The patterns and trends from the technical data must be popularized and must use graphics to make them usable according to purpose.

How the locals perceive these risk communication measures

This study dealt with the feelings, thoughts, and perceptions of the FGD participants on the risk communication.

Risk Perception and Behavioral Change

The participants all agreed that they perceive risk every time any of the climate risks is about to happen. They want to know the extent of damage the risk can affect them. It was even observed many times that during typhoons some locals refuse to evacuate to the centers and they rather stay home. This is because they do not know the nature of the climate risk, how it can affect them, and how bad it can damage their properties. From their experience, those who did not evacuate still remained safe and unharmed. This gives them the feeling that even at home, they can be safe from climate risks. So they might as well not leave their homes. From this experience, they were able to shape their perception that staying at home during disasters is still safe after all.

This is where effective climate risk communication messages must be disseminated. Messages can be disseminated way before or immediately before the risk as a precautionary measure. In fact, it is affirmed by the FGD participants that they receive messages before the disaster. Such messages must include an element of “fear” and how they can cope with it. The Protection Motivation Theory recognizes that “people differ in their sensitivity and vulnerability to certain types of events, as well as in their interpretations and reactions.” Therefore, long before the climate risk, it is important that an audience analysis must be made and messages must be designed to establish the element of “fear”. This will help affect the attitude and behavior of a particular audience segment that is targeted by the message.

The study of Heydari, S.T. et al. (2021) determined how risk communication (RC) and risk perception (RP) affect protective and preventive behaviors (PB). It found out that risk communication has direct and indirect positive effects on preventive behaviors. The result further indicated that there is a two-way relationship between them which can define the risk communication strategies to be adopted during the pandemic. Ngo (2021) also cited that risk perception must be included in risk communication to be effective. Direct experiences influenced individuals’ knowledge, attitudes, risk perception and behavioral responses to climate change. Further, his study emphasized the importance of congruent messages to change behaviors particularly in the young respondents. The study of Ngo (2021) also made an interesting observation from

their respondents who were adolescents. For them, climate change communication was more effective on mitigation than adoption of good behaviors. This is probably due to a perception of climate change as distant, due to the “longer personal time horizon of adolescents and their currently limited autonomy in the household.” (Ngo 2021, p.111) As a theoretical and practical implication, there can be two approaches to reduce this psychological distance. Either the risk be brought closer to the individual or let the individual come closer to the risk (Zwickle and Wilson 2013).

In this present study, the FGD participants disclosed that they need a sound and effective risk communication to help them make wise decisions. These decisions include if they will leave their house, where to seek shelter for their family’s safety, where they will get food supply, and who will give them medicines in case any of the family member gets sick or gets hurt. There is, however, one good practice that is already established and which the locals appreciate. Once a typhoon is announced, immediately the barangay officials conduct house-to-house visit and encourage everyone to evacuate. Those who evacuate bring their basic needs and their own food. They also force those who do not want to leave their houses. The FGD participants disclosed that there are few who rather stay at home because of their previous experiences of being safe and unharmed despite just staying in their homes during typhoons.

Problems encountered in risk communication

Understanding the problems in communicating climate risks and how to overcome them is a significant area of study. The identified problems were clustered in three themes; 1. Knowledge, skills, and attitude, 2. Safety and security, and 3. Solid waste management.

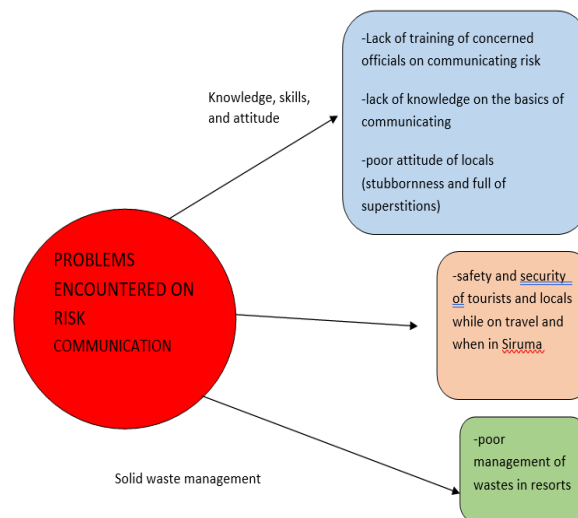


Figure 2| Problems Encountered by Locals on Risk Communication.

As the climate risk communication is practiced, the participants observe some blatant problems that need to be addressed to achieve an effective risk communication. The primary problem they encountered is on the knowledge, skills, and attitude. FGD result shows that the concerned officials lack knowledge on the basics of communicating the 5Ws and 1H of the upcoming risk. Some vital information are not disclosed accordingly. This results in misinformation or inadequate information for them to prepare. Another is the lack of training of concerned officials on how to communicate the climate risk effectively to the locals. Specifically, they cannot identify clearly what message is best for what medium. Another problem in this cluster is the attitude of the locals. Some are stubborn and they follow superstitious beliefs to interpret signs from nature. That is why some do not like to leave their houses during disasters because they have a way to interpret these risks from nature. Attached to these knowledge, skills, and attitude is the problem on lack of funding to address these problems and pursue plans and programs on tourism. And a handful of barangay officials do not function during disasters.

They do not conduct house-to-house visits to tell locals to evacuate. They simply attend to the safety of their own family.

The second problem cluster is on the safety and security of tourists and locals. They all agree that travel destinations must be safe during and even after the risk occurred. As of today, there are only 2 that act as tourist police. They need training in disseminating risk messages. In terms of physical safety when travelling to and from Siruma, they feel the need to add checkpoints although according to the interviewee who is a representative of Siruma MPS, Police Non Commission Officer (PNCO) Lazarvin Olaez,

As of today, the checkpoint is at the boundary situated in barangay La Purisima, Siruma which is about 7 km to Siruma proper and 47 km to Tinambac proper. Siruma and Tinambac PNP have synchronized, coordinated, and joint activities for apprehension.

He also added further that,

Siruma used to be not safe years back. But 5 years ago when the road was concretized, there was no more holdup cases since the victims can easily ask for help and flee from the critical sites.

But participants in the FGD still believe that there are isolated extortion cases. One participant shared his recent extortion experience in broad daylight when their car was stopped by armed men asking for money. And in his fright, he gave all for fear that his family and house in the población might be bombed if he refused. This shows that any time of the day, the locals, guests and tourists are at risk.

The third problem cluster is on managing the solid wastes generated in the resorts. Solid Waste Management is not so defined. Signages are usually small and oftentimes ignored by the tourists. FGD participants expressed that they want to maintain the environmental dignity of the beaches in Siruma. With this, they, themselves, feel that there is a need to form the values or re-educate the tourists and locals specially on environment protection to avoid future disasters in their locality.

Recommendations to improve risk communication in tourism in Siruma, Camarines Sur

After a thorough study from the responses of respondents in the FGD sessions conducted, it may be recommended that:

1. Develop a holistic Climate Risk Communication Plan that defines the communication strategies, appropriate media, and focused, directed and accurate messages. The message source must 1) be first, 2) be right, 3) be credible, 4) express empathy, 5) promote action, and 6) show respect.
2. Conduct regular trainings on; 1.) Climate risk communication. (What to communicate, when to communicate, and how to communicate) The FGD participants expressed that while the LGU employees and resort owners have capacity building activities along climate risk communication in tourism, these are never sufficient. Therefore, there is a need to intensify trainings, and 2.) Value formation. This training is needed to develop positive behavior in maintaining and protecting the pristine beaches and other tourist attractions particularly during the peak season.
3. Improve internet infrastructure in the community. Many have cellphones and they can use this particularly during climate risks to get accurate information from credible sources. Activate dead spot and maintain and use hotlines

CONCLUSION

From the findings generated in the FGD sessions, the following are concluded:

- The four risks experienced by the locals for the last five years were typhoons, heavy rainfall and flooding, storm surge, and temperature extreme which is El Nino phenomenon. Of these 4 climate risks, they experience typhoons the most and the most severe was Typhoon Ulysses in 2020 at level 4.
- The primary source of the climate risks are the Local DRRM Officer in coordination with Barangay Officials and the Philippine National Police. Messages are communicated through interpersonal communication such as house-to-house visits, and chat with neighbors, and through the indigenous medium “bandilyo”. The gadgets used in receiving messages are cellphones and two-way radio.
- Despite the abundance of risk information, some locals refuse orders for preventive evacuation mainly because they do not perceive the risk due to some not credible sources and unpersuasive messages. Focused, directed and accurate risk communication messages can help them perceive upcoming risk to behave positively.

RECOMMENDATIONS

The study recommends that LGU Siruma:

1. Draft and implement a holistic Climate Risk Communication Plan that includes communication strategies using various media with focused, directed and accurate messages.
2. Conduct skills trainings on risk communication particularly on framing and communicating risk messages, and trainings on value formation, and
3. Enhance internet connectivity in Siruma to make available all climate risk messages especially when climate risks are approaching.

REFERENCES

1. Asian Development Bank. 2018. Information Sources to Support ADB Climate Risks Assessments and Management. Technical Note. <https://www.adb.org/publications/adb-climate-risk->
2. Bertram, K, (n.d.). John Hopkins Center for Communications Program. Risk Communication and Community Engagement. <https://ccp.jhu.edu/what-we-do/expertise/risk-communication-and-community-engagement/>
3. Centers for Disease Control and Prevention. 2014. Crisis and Emergency Risk Communication Manual. https://emergency.cdc.gov/cerc/ppt/cerc_2014edition_Copy.pdf
4. Charles, L. and Ward, N. 2007. Generating Change Through Research: Action Research and Its Implications. Centre for Rural Economy Discussion Paper Series #10. University of Newcastle Upon Tyne.
5. FAO and WHO. February 1998. Expert Consultation on the Application of Risk Communication to Food Standards and Safety Matters. <http://www.fao.org/3/x1271e/X1271E03.htm>
6. Fornoles, J. 2008. Meet “Mr. Typhoon”. An Interview with Naga’s Prominent Meteorologist, Mr. Mike Padua. <https://www.typhoon2000.ph/interview.htm>
7. Goerlandt, F., Li, J. and Reniers, G. (2020). The Landscape of Risk Communication Research: A Scientometric Analysis. *Int J Environ Res Public Health*. 2020 May; 17(9): 3255. doi: 10.3390/ijerph17093255
8. Heydari, S.T. et al. 2021. The effect of risk communication on preventive and protective Behaviours during the COVID-19 outbreak: mediating role of risk perception. *BMC Public Health*. 21, 54. https://en.wikipedia.org/wiki/Protection_motivation_theory
https://en.wikipedia.org/wiki/Theory_of_change
9. Lang, S., Fewtrell L., and Bartram, J. 2001. Risk communication. In book: *Water Quality: Guidelines, standards and health*. https://www.researchgate.net/publication/261035726_Risk_communication

10. Lindsey, M. et al. 2022. Insights into Improving Risk and Safety Communication through Environmental Health Literacy. *International Journal of Environmental Research and Public Health*. <https://www.mdpi.com>
11. National Ocean Service. 2022. What is storm surge? <https://oceanservice.noaa.gov/facts/stormsurge-stormtide.html>.
12. Ngo, C. 2021. Climate Change Risk Communication: How message frames shape perceptions of risks and efficacy, and influence behavioural intentions to climate change adaptation and mitigation. PhD Dissertation. Wageningen University. 265 pp.
13. Philippine Atmospheric, Geophysical and Astronomical Service Administration (PAGASA). About Tropical Cyclones. [https://www.pagasa.dost.gov.ph/information/about-tropical-cyclone#:~:text=SEVERE%20TROPICAL%20STORM%20\(STS\)%20%2C,or%20more%20than%20100%20](https://www.pagasa.dost.gov.ph/information/about-tropical-cyclone#:~:text=SEVERE%20TROPICAL%20STORM%20(STS)%20%2C,or%20more%20than%20100%20)
14. Philippine Atmospheric, Geophysical and Astronomical Service Administration (PAGASA). <https://www.pagasa.dost.gov.ph/mandate-and-functions>
15. UN Inter-Agency Secretariat of the International Strategy for Disaster Reduction (UN/ISDR). 2006. Developing Early Warning Systems: A Checklist. Proceeding of the Third International Conference on Early Warning. 13 pp.
16. Villafuerte, M. 2021. Storm Surge Vulnerability Index in Siruma, Camarines Sur. Masters Thesis: Central Bicol State University of Agriculture.
17. Wardekker, A. 2004. Risk Communication on Climate Change. https://www.researchgate.net/publication/262296226_Risk_Communication_on_Climate_Change.
18. Zwickle, A. and Wilson, S. 2013. Construing risk: Implications for risk communication. ISBN: 1136272356. https://www.researchgate.net/publication/267026110_Construing_risk_Implications_for_risk_communication.