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THE ROLE OF TOURISM ON DISASTER RISK MANAGEMENT OF INDIGENOUS PEOPLES IN TAIWAN

A COMPARATIVE CASE STUDY

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List of abbreviations

CBT	Community-Based Tourism
CIP	Council of Indigenous Peoples
CRED	Centre for Research on the Epidemiology of Disasters
DA	Development Association
DPP	Democratic Progress Party
DPRA	Disaster Prevention and Response Act
KMT	KuoMingTang
NTD	New Taiwan Dollar
NTNU	National Taiwan Normal University
ODM	Office of Disaster Management
UNISDR	United Nations International Strategy for Disaster Reduction
USD	United States Dollar
SPNDA	Standard Procedure for Natural Disaster Assistance

1 United States Dollar = 31 New Taiwan Dollar (Wisselkoers.nl, 2019)

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Summary

Natural disasters worldwide are bound to increase in frequency and intensity. This research took place in Taiwan, which is the most disaster prone country on the planet. Taiwan being located at the juncture of Pacific, Eurasian and Philippine Sea plates and on the path of west Pacific, typhoons, earthquakes and heavy rainfall are frequent occurring events. Not only is Taiwan the most prone country to natural hazards on earth, it is also the most densely populated country. Within Taiwan, the indigenous community of Taiwan is considered the most vulnerable to natural disasters, since they foremostly live in the mountainous parts of Taiwan.

Tourism has been playing an important role for indigenous communities around the world in terms of economic development and cultural survival. Since the early 2000s, the Taiwanese government has been in great favour of tourism development.

As indigenous communities and their tourism activities are very present in the scientific literature, as is the community disaster risk management/reduction of vulnerable groups around the world. However we know very little about the connection of these two. Therefore this thesis will analyse the influence of community-based tourism activities of disaster prone indigenous communities on their disaster risk management.

The research is conducted using a mixed methods approach comprised of semi-structured interviews, surveys, desk research and observation. Three villages from the indigenous tribe the 'Tsou' are researched in this comparative case study, Shanmei, Chashan and Xinmei, of which they all were hit by typhoon Morakot in 2009. The impact of the typhoon was researched as well as the vulnerability and coping capacity of the villages and the households within the villages.

The research suggests that there is a positive connection between community-based tourism and disaster risk management. This is foremostly the case because of the governmental interest in tourism development which enables the villages which are involved in tourism to access funding that helps them recover from typhoons such as typhoon Morakot in 2009.

Concludingly, the role that community-based tourism plays in the disaster risk management of indigenous communities in Taiwan is the role of giving access to funding to enable the indigenous peoples to recover from a typhoon.

1. Introduction

More than 2.5 million people and almost \$4 trillion have been lost to disasters caused by natural hazards worldwide in the past 30 years (World Bank, 2018). Annual losses have been increasing rapidly of late, increasing from \$50 billion in 1980 to \$200 billion a year in the past decade (World Bank, 2018). This trend of increasing losses due to hazardous events was poignantly underlined by global losses of \$330 billion in 2017 (Munich Re, 2018). As the Centre for Research on the Epidemiology of Disasters (CRED) states in their '2018 Review of Disaster Events', particularly climate-related disasters are forecasted to increase in frequency and intensity (Centre for Research on Epidemiology of Disasters (CRED), 2019).

Research from the World Bank in 2005 shows that Taiwan is the most vulnerable country to natural hazards on the planet (Dilley et al., 2005). According to Dilley et al. (2005), 73% of the country's total area and population is at risk to being exposed to at least three or more hazards. The five most frequent hazards are; typhoons, earthquakes, landslides, floods and debris flows. Not only is Taiwan the most hazard prone country on the earth, it also is the most densely populated country in the world (Tso & McEntire, 2010). Being located at the juncture of Pacific, Eurasian and Philippine Sea plates and on the path of west Pacific, typhoons, earthquakes and heavy rainfall are frequent occurring events in Taiwan (L. C. Chen, Liu, & Chan, 2006).

The three main drivers of risks for natural disasters in Taiwan are outlined by the Environmental Protection Administration of the Executive Yuan. Firstly are 'natural vulnerability' such as frequent typhoons, intensive rainfall, steep mountains and rushing rivers. Secondly are the 'effects of socioeconomic development' such as urbanization and increased water consumption. Thirdly are 'the impact of global climate change', the rise of temperatures and foremostly the increase in extreme precipitation events (Chan, 2012).

Indigenous people are among the most vulnerable communities worldwide (Chi, 2001). Due to the perpetual desire for economic growth which characterises modern capitalism, most Taiwanese indigenous are put under pressure in many ways (Chi, 2001). As stated by Lin & Polsky (2016), the Taiwanese forest-dependent indigenous and local communities which live in mountainous areas are among the most vulnerable groups in Taiwan, comprising only 2% of the Taiwanese population (Ryan, Chang, & Huan, 2007). Indigenous groups in Taiwan have supported themselves by shifting cultivation, fishing, hunting and gathering. In 1945 the Nationalist Chinese government implemented policies that were designed to make the mountains like plains and modernise agricultural practices. With these policies, some land, originally used by the indigenous groups for hunting and gathering, became state owned and restricted indigenous access to resources (Tao, 2006). As the land of the indigenous communities decreased, income and their concomitant capacity to satisfy their own physical and livelihood needs dissolved. Not only did jobs decrease within the rural indigenous communities, but families were also in need of more money for food since insufficient food was produced (Tao, 2006).

Tourism has therefore become an important mode of economic development and cultural survival for indigenous people (Tao, 2006). In the early 2000's, the Taiwanese government adopted the target of a doubling of the volume of tourists that visit the country by 2008, which almost succeeded (Ministry of Transportation and Communication, 2008). Although this ambition was not fully reached by 2008, it was achieved in 2016 when 10.7 million people visited Taiwan (R. Chen, 2017).

Indigenous communities and their tourism activities are heavily represented in the scientific literature, as is the community disaster risk management/reduction of vulnerable groups around the world. We know very little about the interaction of the two however. Therefore, this thesis will analyse the influence of community-based tourism activities of disaster prone indigenous communities on their



disaster risk management. The scientific relevance of this research lays in unravelling the connection of two big topics within the scientific world, namely community-based tourism and disaster risk management. Although both have been widely researched in the past, connecting the two can provide the scientific world with new insights, such as community-based tourism, for example, influencing the disaster risk management tremendously. This can be due to the fact that community-based tourism brings in considerable capital for the community which can be used to better their coping capacity, hence better their disaster risk management. A potential alternative is that community-based tourism has an unexpected impact on the disaster risk management of communities that are involved in community-based tourism. This unexpected impact could be a negative one, as that community-based tourism worsens the community structure and therefore negatively impacts disaster risk management. The scientific relevance is in close connection with the societal relevance of this thesis, since tourism is growing every year all around the world, as is the intensity and frequency of natural hazards. To understand the connections and interlinkages between tourism and disaster risk management is important, as it can provide insights which can inform tourism policy for many developing countries that have to cope with disasters. Taiwan is growing its tourism industry every year, while being the most disaster-prone country in the world. Concludingly, Taiwan can benefit from this research specifically because the results could provide interesting information about the connection of two very important developments of Taiwan.

2. Theoretical Framework

The theories discussed under this section of the thesis can be broadly grouped into two complementary groups. The first comprises disaster risk management, vulnerability, coping capacity and resilience. The latter is comprised of a specific aspects of the broader notion of tourism, namely community-based tourism.

2.1. Disaster Risk Management

Before disaster risk management can be outlined, the concept of a disaster needs to be clear. The United Nations International Strategy for Disaster Reduction (UNISDR) states that a disaster is ‘a serious disruption of the function of a community or society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources’ (UNISDR, 2009, p. 9). Additionally the UNISDR adds that a disaster is a result of the combination of the exposure to a hazard, the conditions of vulnerability that are present and the insufficient capacity or measures to reduce or cope with the potential negative outcomes (UNISDR, 2009).

Van Niekerk (2011) makes a shrewd observation when discussing the differences between human and natural disasters. Van Niekerk (2011) states that all disasters are manmade, since the buildings that collapse and communities that lose their agriculture due to a mudslide were put there by humans and not effectively thought through with attention to disasters. It is important to mention that natural hazards, such as earthquakes, trigger disasters (van Niekerk, 2011). Since disasters are always manmade, they have the potential to be avoided.

Disaster risk management is ‘the systematic process of using administrative directives, organizations, and operational skills and capacities to implement strategies, policies and improved coping capacities in order to lessen adverse impacts of hazards and the possibility of disaster’ (UNISDR, 2009, p. 10).

In 1917, disasters became a field of study when Samuel Henry Prince created the idea of disaster sociology (Mitra, 2013). For many years, when a disaster occurred, recovery was the main focus of most countries in the world (Mitra, 2013; Weng Chan, 2011; Yodmani, 2000). In more recent decades however, when hazards turn into disasters, management of this disaster and reducing the risk of it happening again have been on the main agenda (Mitra, 2013; Weng Chan, 2011; Yodmani, 2000). Previously disasters were treated as a one-time event which governments and relief agencies responded to. Thereafter, contingency planning was the approach of the governments and relief agencies, by stockpiling relief goods and having a better relief management in place. The next stage in disaster risk management was the technocratic paradigm, where public policy and geophysical engineering was the best way to deal with disasters. Thenceforth, the realization of vulnerability being a key factor on the impact that a disaster can have introduced vulnerability analysis as a tool for disaster management. More recently, a more comprehensive approach arose, namely that of risk management, where three components had an interrelated relationship; hazard assessment, vulnerability and management capacities (Yodmani, 2000).

Disaster Risk Management (DRM) nowadays includes but goes beyond disaster risk reduction, this by adding a management perspective that combines prevention, mitigation and preparedness with response (Baas, Ramasamy, de Pryck, & Battista, 2008). DRM is comprised of three interlinked concepts. These are vulnerability, coping capacity and resilience. In the coming sections these concepts will be discussed. Resilience was not operationalized during the research, but is necessary to mention in this debate. Since the concepts of vulnerability, coping capacity and resilience are interlinked, one

cannot be used without explaining or even mentioning the other. Nevertheless, the research will mainly focus on the vulnerability and coping capacity of the researched communities.

2.1.1. Vulnerability

Vulnerability is an essential concept in hazard research and central to the development of hazard mitigation strategies at the local, national and international level (Cutter, 1996).

Vulnerability is defined as the characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard (van Niekerk, 2011). The consequential conditions which determine vulnerability are physical, social, economic and environmental factors (UNDP, 2004; van Niekerk, 2011). Vulnerability is conceived as a three dimensional concept composed of exposure to a hazard, the sensitivity to the occurring disaster and the adaptive capacity of those affected, for example a community (Chang, Yip, Conger, Oulahen, & Marteleira, 2018; IPCC, 2007; K. H. E. Lin & Polsky, 2016; McCarthy, Canziani, Leary, Dokken, & White, 2001). Two types of vulnerability are common in the scientific world; physical and social vulnerability. When analysed together as a whole, the common concept is human vulnerability (Pelling, 2003). Physical vulnerability conceptualizes the vulnerability of the built environment. A household is more physically vulnerable when a tsunami is about to hit when living near the coast, than when living on top of a hill. Physical vulnerability is for example researched when a community is living in a landslide-prone area (Kang & Kim, 2016). Social vulnerability is about the experienced vulnerability of people and their social, economic and political systems (Pelling, 2003). Social vulnerability includes social aspects of, for example, a household's income, education level and strength of social networks (Flanagan, Gregory, Hallisey, Heitgerd, & Lewis, 2011). According to Cannon & Müller-Mahn (2010), the concept vulnerability is researched to better understand the power relations in and around a community.

2.1.1.1. Vulnerability context

This research will take the vulnerability context into account, which describes the external uncontrollable factors that influence people's assets and livelihood opportunities. Within this research, special focus will be on the access and power relations of the vulnerable and how these levels of access and power relations influence their level of vulnerability. The three main categories of the vulnerability context are trends, shocks and seasonality (Eriksen & Silva, 2009; Twigg, 2001). Trends are mostly long-term and large-scale, for example economic trends or trends in governance. Shocks, especially in this research, are viewed as disasters, more precisely natural disasters. Seasonality is linked to the seasonal changes, which are important especially when looking at tourism and disasters that foremostly occur in a particular season.

2.1.2. Coping capacity

The concept adaptation found its origin in the social sciences and later famously informed Darwin's ideas around evolutionary biology (Smit & Wandel, 2006). Adaptation herein refers to the development of genetic or behavioural characteristics which enables organisms or systems to cope with environmental changes in order to survive and reproduce (Kitano, 2002). Adaptation, nowadays, can be seen as a process of change in response to a change in the physical environment or a change in internal stimuli, such as demography, economics and organization. This approach encompasses a broader range of human adaptation which goes beyond biophysical stresses (Smit & Wandel, 2006). Adaptive capacity varies from system to system, sector to sector and region to region, as do the determinants of adaptive capacity (Yohe & Tol, 2002). Most adaptation is undertaken by individuals or communities when triggered by an extreme event, such as a hazard. Generally, the most considerable portion of the adaptations are done by individuals and communities, although sometimes governments can undertake adaptations on behalf of society. Furthermore, most adaptations are triggered by extreme events, with few in anticipation of these events (Adger & Vincent, 2005).



Adger & Vincent (2005) state that human societies throughout history have been adapting to climate change. Nowadays many scientists argue that future climate change will push beyond the limits of adaptation (Adger & Vincent, 2005). It is also assumed that the capacity of societies to adapt to climate change is positively linked to the level of economic development, the more economically developed a community is, the better they can cope with climate change. Traditional societies do not agree, since they have more experience with adapting to the climate and therefore have a tremendous amount of knowledge (Adger & Vincent, 2005; Boillat & Berkes, 2013). Although they might have a large amount of adaptation knowledge, it has been broadly accepted that indigenous communities throughout the world will have the biggest challenge in adapting to climate change with the increase in natural hazards it will bring (Bardsley & Wiseman, 2012; Bradley & Corwyn, 2002; Petheram, Zander, Campbell, High, & Stacey, 2010; Tschakert, 2007).

Within the scientific world, adaptive capacity is mentioned alongside coping capacity. The difference between these is that adaptive capacity is the capacity, for example, of a community to adapt to a shock or gradual change in the environment (environmentally and socially). Whereas coping capacity is the capacity of a community to directly cope with a hazardous event with the available skills and resources (Birkmann, 2006; Scheuer, Haase, & Meyer, 2011).

As Yohe & Tol (2002, p. 39) state: “Working to improve specific coping capacities by working to enhance one or more of its underlying determinants can build adaptive capacity for reducing vulnerability to a specific stress”. Hence, coping capacity could be better researched when researching the ability of a community to cope and therefore adapt to a hazardous event.

The coping capacities of households and communities cannot be succinctly represented in a singular quality or quantity, rather the coping capacities vary across the three stadia of any disaster (Baas et al., 2008). Before the actual occurrence of the disaster, the coping capacity of a household or community is embodied in the preventative measures taken, such as physical improvements to houses or disaster management plans of the community. The second stage of the disaster is that moment when the physical impact hits, during the disaster. At this point, coping capacity can be expressed as the degree to which previously implemented structures maintain their integrity and whether preformulated plans are successful or not. The final stage of the disaster, the rebuilding stage, is in many ways a reproduction of the initial phase and, as such, this can be understood as a cyclical process. In the reconstruction of homes and communities, improvements, serving to offset damages from future disasters, can be seen as preventative measures.

The indicators used by the Australian Natural Disaster Resilience Index for coping capacity will be used in this study, as has proved to be useful assessing the coping capacity of Australian communities (Parsons et al., 2016). Although the title of the index can be misleading, the index also conceptualizes and operationalized coping. From this index this research took the indicators for coping capacity to work with. These indicators are social characteristics such as employment and occupation, economic capital such as income, infrastructure and planning, presence of emergency services, the cohesion and connectedness of the community and the availability and accessibility of natural hazard information.

2.1.3. Resilience

As stated before, resilience is part of the larger concept of disaster risk management in this research. Although it will not be operationalized in this research, it is important to understand the concept to be able to grasp the bigger picture. As vulnerability and coping capacity already cover a large part of the concept resilience, to prevent overlap in this study it is not operationalized but noteworthy.

Resilience is the 'ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its basic structures and functions' (UNISDR, 2009, p. 24). Resilience of a community in respect to potential hazardous events can be determined by the degree in which a community has the necessary resources and is capable of organizing itself prior and during a disaster (UNISDR, 2009). Resilience outcomes refer to the ability of social, economic and ecological systems to successfully deal with change by absorbing, adapting and transforming to address complex risks and new opportunities. As Kaur et al. (2017) mention, three aspects of resilience are important when researching the ability of a household to respond to climate hazards, these are; (1) absorptive resilience, which is the ability of social, economic or ecological systems to maintain their original structure by absorbing infrequent low-magnitude risks. (2) Adaptive resilience differs from absorptive resilience since it stands for the ability to improve the original structure and bounce back better when shocks occur. (3) Transformative resilience goes one step further, as it stands for the ability to fundamentally change structures and move beyond vulnerability thresholds. Transformative resilience is very different than absorptive and adaptive resilience, according to Béné et al. (2014) are absorptive and adaptive resilience in a synergetic relationship where both influence each other.

Béné, Wood, Newsham, & Davies, (2012) state that resilience is a too linear approach to capture a community's vulnerability after a disastrous event. According to Béné et al. (2012), a disastrous event can have multiple effects on a community with many different households, as a farmer household is affected differently by a drought than a household of a civil servant. Therefore, resilience needs to be researched with an open mind and not be seen as the panacea of all development (Béné et al., 2012). Hence the choice to leave resilience out of the operationalization of the research.

2.1.4. Review of Disaster Risk Management

Disaster risk management and the three concepts, vulnerability, coping capacity and resilience, linked to it have been very important in sustainability science. They have been used in many forms, ways and combinations. Since they are very large and comprehensive concepts many researchers have been using them in ways that suited their particular studies (Miller et al., 2010). Therefore this research will make use of this scientific freedom and use these concepts in a way which makes them suitable for this study.

Vulnerability, coping capacity and resilience almost cannot be explained independently. This since resilience is derived from the vulnerability concept, as people that are equally vulnerable can have different responses to disasters (Van Breda, 2018). These differences in responses are caused by the different coping capacities of a community or household leading to different types of resilience, as explained above.

Within scientific literature and research it is difficult to put these concepts in confined boxes of their own. Therefore this research uses the concepts vulnerability and coping capacity as part of the larger concept of disaster risk management, because the focus does not need to lay on the specifics of the two concepts. This enables the study to interlink the concepts and use them in a more liquid fashion, where one concept can flow into the other and vice versa. These concepts will enable this study to look into the vulnerability aspects of the households within the communities, the coping capacities they have and how they bounce back from the shock of a typhoon all under the larger concept of disaster risk management. Vulnerability and coping capacity will be operationalized, whereas resilience will not be. Nevertheless, as mentioned before, it was necessary to mention resilience in the theoretical framework as the concept is important in the whole disaster risk management debate.

2.2. Sustainable Livelihood Framework and livelihood trajectories approach

To understand why the research is focussing especially on the concept of access, the inspiration for this will be discussed. The inspiration being the sustainable livelihood framework and the livelihood trajectories.

Sustainable livelihood framework (SLF) is a conceptual framework used by many development researchers (Adato & Meinzen-Dick, 2002). The framework is mainly used to analyse causes of poverty and / or access to resources. In the academic world the SLF is viewed as a holistic approach to development thinking, as it considers multiple and interactive influences which livelihoods and its capitals can have. The framework mainly focusses on the livelihood capitals mentioned in the previous concepts (Adato & Meinzen-Dick, 2002; Majale, 2002). Since the concepts resilience, coping/adaptive capacity and vulnerability do overlap a lot, the overarching operationalization is the sustainable livelihood framework since the livelihood capitals are reoccurring in all concepts. Hence, the sustainable livelihood framework can be seen as the practical operationalization of the concepts. Focussing on the livelihood capitals of the indigenous communities, their influences will be seen in the vulnerability context, resilience and coping capacity of these communities and therefore in the disaster risk management of the communities. By adding the tourism perspective into the research framework the research broadens its scope.

Livelihood capitals are researched quite often in social science, but they tend to be very static. Often livelihood capitals are depicted as trade-offs which make them seem interchangeable, yet this is not the case (de Haan & Zoomers, 2005). This inflexibility combined with the fact that it ignores power relations make the livelihood capitals a pentagonal prison for both the researcher and the researched (McLean, 2015). A less static approach to livelihood research is the livelihood trajectories approach which focusses on the access, institutions and power relations of livelihoods. Access to capitals and the social differentiation is according to De Haan & Zoomers (2005) a result of the difference between those who have succeeded in choosing a successful trajectory and those who have not. When one group is succeeding this can prevent another group from being successful. Hence, access to capitals is a livelihood activity of inclusion and exclusion (de Haan & Zoomers, 2005). The livelihood trajectories framework consists of multiple layers. The first layer refers to one's capability or qualification to have access to a certain capital. The second layer concerns the power struggles in a community surrounding livelihood capitals and the access to the various kinds of capitals. The power struggles are affected by the performance of social relations and therefore the connection to institutions. Lastly, the underlying structures of the power relations play an important part within the livelihood trajectory framework. When understanding these underlying structures within the context of a community, the development of one household over another can be better understood.

Within this research, when looking into access of the communities and the households therein, power structures and underlying structures thereof can be analysed. The theory of access that will be conceptualized is inspired by the theory of livelihood trajectories.

2.3. Access

The theory of access evolved from the classical definition of access, 'the right to benefit from things', to 'the ability to derive benefits from things' (Ribot & Peluso, 2003). Hereby the theory of access 'brings attention to a wider spectrum of social relationships that constrain or enable people to benefit from resources without focussing on property relation alone' (Ribot & Peluso, 2003, p. 154). According to Ribot & Peluso (2003), access to resources is influenced by technology, capital, markets, knowledge, authority, social identities and social relations.

Access to technology has in many ways influence on resource access. A fence, for example, can be used to keep access to oneself and to keep others out. More advanced technology can be used for a more efficient way of extraction. More indirect technologies that facilitate access are roads and the width of a road. Access to capital is a factor which can enable many other factors, for example access to technology, since with capital technologies can be bought.

Access to capital can also be used for resource access control when purchasing the rights of the access or the resource itself. It can be used to maintain resource access when capital is used to pay rents or to buy influence over the people that control the resource.

Access to markets has influence on the ability to benefit from resources in several ways. Since the ability to access the market has more influence on the commercial benefit of access to a resource than the right to own the resource. Having the right to the resource but lacking the access to the market can have a negative effect on the commercialization of the resource for the rightful owners since people with access to the market can benefit from the lack of access of this person. Access to markets does not only mean the access of individuals or groups to gain, control and maintain entry to exchange relations. Market access also has indirect influence on the different scales of access, as access to a market can open up new relations between individuals and or groups.

Access to labour and labour opportunities shape who can benefit from resources. Individuals or groups that control access to labour and or labour opportunities can use this access to get favours or to strengthen relationships. Access to labour opens up many other scales of access, as labour can give people access to capital, access to markets, access to technology and so forth.

Access to knowledge plays an important role in shaping who can benefit from resources. Beliefs, ideological controls and discursive practices, as well as negotiated systems of meaning, shape all forms of access. Knowledge gives power to the individual as it can give the person better access to labour and labour opportunities. Knowledge also can give the person a direct benefit, as someone who knows the price of a good can trick someone else, who does not know the price, to pay more.

Access to authority can have a great impact on a person's or group's access to resources. Privileged access to the authorities who make and implement laws can have a great impact on who benefits from the available resources. This access to authority can be via the legal channels, such as lobbying. Access to authority is often limited and only accessible for the upper class of the society, since some people do not have the access to technology, capital and or knowledge to reach the authorities. According to Ribot & Peluso (2003, p. 170) are 'authorities nodes of direct or indirect forms of access control where multiple access mechanisms or strands are bundled together in one person or institution'.

Access through social identity affects the distribution of benefits from resources. Access to resources is often influenced by social identity or membership of a community or a group. Distinction is often made between groups of age, gender, ethnicity, religion, status, profession, etc. Access through social identity can be very interesting within indigenous communities, since a form of hierarchy is present within most indigenous communities. Community leaders or village chiefs can sometimes control resources and the access to them.

Access via negotiation of other social relations is, like identity, central to all other elements of access. All of the mechanisms of access, discussed above, are forms of social interactions and (power) relations. Ribot & Peluso (2003, p. 160-161), state that access analysis involves, first 'identifying and mapping the flow of the particular benefit of interest' secondly 'identifying the mechanisms by which different actors involved gain, control and maintain the benefit flow and its distributions' lastly 'an

analyses of the power relations underlying the mechanisms of access involved in instance where benefits are derived’.

As stated above, access comes in many forms and some types of access can enable other types of access. As these categories mentioned above are heuristic; none is distinct or complete. Each form of access may enable, conflict with, or complement other access mechanisms and result in complex social patterns of benefit distribution.

This research will be using the access framework, inspired by livelihood trajectories framework which focusses on the importance of access. With the use of the access framework, resource conflicts can be analysed and understood.

While an independent concept is in its own right, the various forms of access discussed by Ribot & Peluso's (2003) underpin the concepts previously discussed. Through utilization of social relations, those households and communities which successfully capitalize on the forms of access discussed previously can use resulting resources to increase coping capacity and therefore reduce vulnerability.

2.4. Tourism

Tourism is viewed by many people as the largest industry in the world and has become one of the most significant forces for change (Williams, 1998). The Mediterranean and Caribbean islands were the first to find prosperity due to the tourism industry, which made many countries view the tourism industry as the gateway to development (Binns & Nel, 2002; Mowforth & Munt, 2003). Although tourism might bring economic prosperity, it is also responsible for a range of destructive environmental impacts: air and water pollution, traffic congestion, physical erosion of sites, disruption of habitats and the species that occupy the visited sites (Williams, 1998). Beyond such environmental impacts, cultural impacts are felt when traditions are changed for the improvement of the tourists experience (Williams, 1998). Hence, many researchers have researched the potential impact of tourism development and sustainability that does and does not lead to drastic environmental and social change (Binns & Nel, 2002; Johnson, 2010).

In the 1980s, the community approach came to light, which viewed locals as being capable of planning and participating in tourism development. Although the community approach might be seen as an interesting development in the tourism sector, with a rapid increase in small tourism firms, the larger tourism companies still remain the main attraction (Milne & Ateljevic, 2001). Hence tourism can be divided up into two distinct stages: The Fordist and the post-Fordist stages of tourism. When the tourism sector was growing rapidly, the sector was focussed on the Fordist approach of mass tourism made available by a small number of producers. Touristic attractions were mainly standardized and focussed on the middle-class consumers (Torres, 2002). Thereafter, post-Fordist tourism came about and was more specialized, individualized and customized in production and consumption (Torres, 2002).

2.4.1. Community-based tourism

Community-based tourism (CBT) tries to tackle the problem of sustainability in connection with tourism and therefore counter the exploitation of wilderness and nature based values within tourism ventures. Receiving increasing attention in academic literature in the past three decades, CBT researches the local responsibilities and practices of tourism development and management (Dangi & Jamal, 2016). Although CBT has been researched since the 80s and has many definitions, according to Dangi & Jamal (2016), common ground can be found with respect to the objectives and its intended benefits such as community development, capacity building, local control and local enterprise development, sustainable livelihoods and poverty alleviation.



According to Hipwell, (2007) community-based tourism must meet six criteria; (1) tourism activities need to be manageable by the community without external assistance, (2) active participation is required of a broad spectrum of the community, (3) it must provide tangible benefits for the host, (4) it must bring about a fair and universal improvement of life to the community members, (5) it must result in protection of conservation values and (6) it should enhance the maintenance of, or improvements in, the cultural environment. Community based ecotourism should therefore empower local people and provide them with the material benefits generated by the tourism activities (Hipwell, 2007).

Three major shortcomings have been attributed to CBT. Firstly, it has a functional approach to community involvement, which means that it has no intent of community development and does not focus on community empowerment. Secondly, it treats the host community as a homogenous unity. Lastly, it does not take external power-based structural constraints on local control of the tourism industry into account (Salazar, 2012). On another note, good practices are difficult to upscale when it concerns a local approach. Salazar (2012) points out the unequal distribution of development through tourism industry, while on the other hand the costs for the community to have a tourism industry is felt by every member.

Kontogeorgopoulos, Churyen, & Duangsaeng (2014) state that the external factors which make community-based tourism a success are a matter of luck, external support and individual leadership. With luck, Kontogeorgopoulos, Churyen & Duangsaeng (2014) mean, not having geographical disadvantages such as remoteness of a village or the lack of suitable natural resources. Therefore communities living next to a paved main road are in a better position to become a touristic attraction.

Secondly, pre-existing participation opportunities within a community is beneficial when developing CBT (Kontogeorgopoulos et al., 2014). As CBT wants to distribute the profits of the tourism industry equally, it is necessary that there is a sort of cooperation with the knowledge how to do so. Although it is criticized by many scholars, external support, especially from governmental agencies is beneficial for the development of CBT. This support is given through funding, marketing and training of the communities members by governmental agencies and NGOs (Kontogeorgopoulos et al., 2014). On the other hand, Aref (2011) states that dependency on government and the lack of authority in local communities can be a barriers to develop CBT.

Lastly, individual leadership is key to having successful CBT. Although leadership is generally neglected as being a success factor, Kontogeorgopoulos et al. (2014) argue it is one of the most important factors.

2.5. Operationalization of concepts

The concepts are operationalized in table 1. The variables of the concepts are given, as are the indicators and which research methods will be used.

Table 2: Operationalization of concepts. Source: Author's research.

Main Concept	Variables	Indicators	Research Method(s)
Community Based Development	Luck	<ul style="list-style-type: none"> - Pre-existing cooperatives - Remoteness to the main road - Visible attractiveness of the area 	<ul style="list-style-type: none"> - Semi-structured interview - Survey - Observation
	External support	<ul style="list-style-type: none"> - Level of help from the government - Level of help from NGOs - Level of help from nearby villages 	<ul style="list-style-type: none"> - Semi-structured interview - Survey - Desk research - Observation
	Leadership	<ul style="list-style-type: none"> - Extent to which a leader will go for the community - Level of community participation 	<ul style="list-style-type: none"> - Semi-structured interview - Survey - Desk research - Observation
Access		<ul style="list-style-type: none"> - Access to technology - Access to capital - Access to markets - Access to knowledge - Access to authority - Social identity - Social relations 	<ul style="list-style-type: none"> - Semi-structured interview - Survey - Desk research - Observation
Disaster Risk Management	Vulnerability	<ul style="list-style-type: none"> - Physical vulnerability - Social vulnerability 	<ul style="list-style-type: none"> - Semi-structured interview - Survey - Desk research - Observation
	Vulnerability context	<ul style="list-style-type: none"> - Trends - Shocks - Seasonality 	
	Coping capacity	<ul style="list-style-type: none"> - Social characteristics - Level of economic capital - Level of infrastructure and planning - Presence of emergency services - Level of cohesion and connectedness of the community - Availability and accessibility of natural hazard information 	

2.6. Conceptual Model

This conceptual model shows all the interlinkages between the concepts mentioned in the theoretic framework. The research will analyse these concepts and their linkages to answer the research questions.

When reading the conceptual model from top to bottom, the hypotheses of the research emerges. It starts off with community-based tourism having a positive influence on the variables of access to resources. This access to resources will enable the community and / or household to increase its coping capacity and to decrease the vulnerability, leading to an increased disaster risk management of a community and / or household. Above the concept of vulnerability, the vulnerability context is displayed with an arrow towards the concept of vulnerability. This means that the vulnerability of a community and / or household is influenced by the vulnerability context, this influence can either be positive or negative.

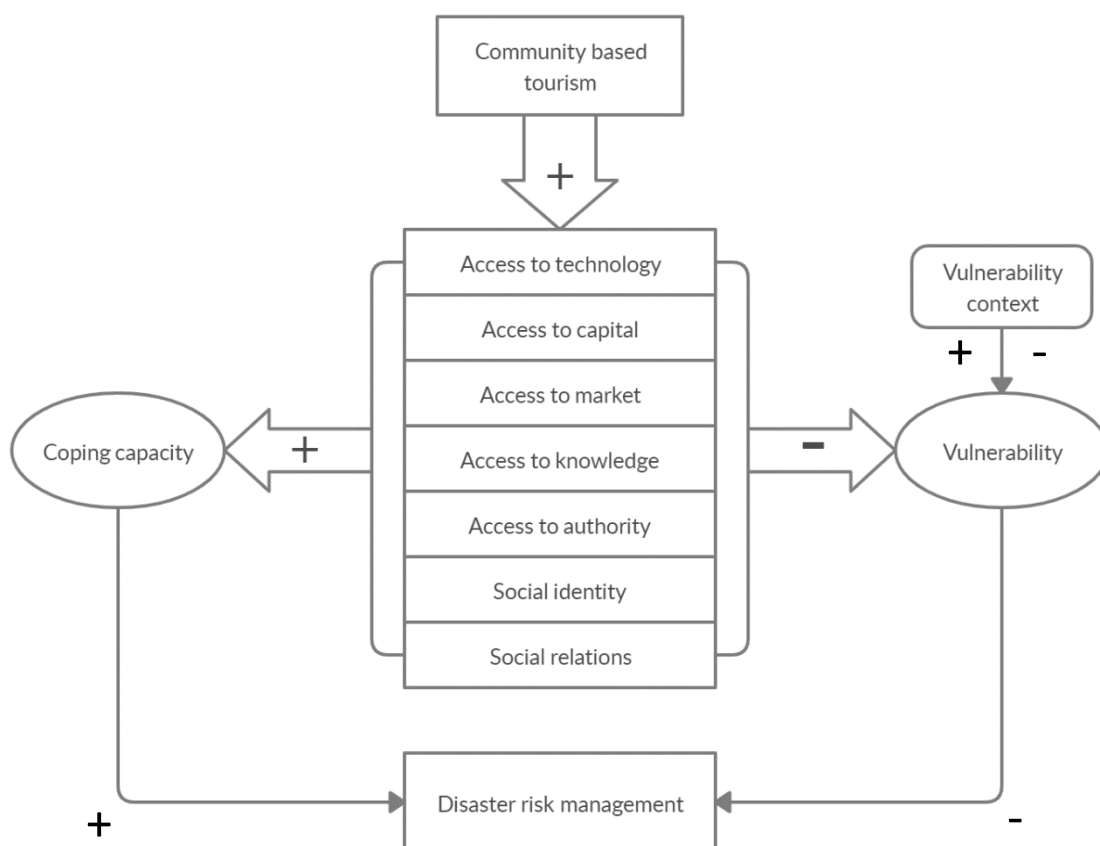


Figure 1: Conceptual model. Source: Author's design.

3. Methodology

The methodology will cover the research questions with its sub questions. Thereafter the case choice is substantiated and the regional context of the study will be given, then the research methods will be outlined and thereafter the limitations that these research methods have are mentioned. Lastly, the possible ethical concerns of the study are given and explained how these were handled during the research.

This research will answer the main question:

“WHAT ROLE DOES COMMUNITY-BASED TOURISM PLAY IN THE DISASTER RISK MANAGEMENT OF INDIGENOUS COMMUNITIES IN TAIWAN?”

Sub-questions:

- What are the livelihood trajectories in terms of access, power structures and institutions within the community and how have they been influenced by community-based tourism?
 - o What type of tourism exists within the community?
 - o How and to what extent is access influenced by tourism in the community?
 - o What are the institutions and structures to access resources within the community, and how is tourism related to this?
- What does DRM look like in the community and how is it influenced by access?
 - o What is the vulnerability context of the communities?
 - o How do communities cope with disasters and how is this different in tourism vs non tourism communities?
 - o In what way is the access to resources affecting the DRM of a community?

3.1. Case choice

The three villages were found and selected during preselection of research sites. During my stay in Taiwan I went to several indigenous villages and I ended up picking three villages on the basis of their tourism industry involvement. The three villages I found were highly involved, medium involved and little to not involved in the tourism industry. This I found interesting for later analyses of the results since the main goal of the research is to identify what and how big the role is of tourism on disaster risk management of indigenous communities.

One village is famous for its ecological park and the tourism that has been developed therein. As this research is researching the impact of tourism on the disaster risk management, the village that had a working tourism industry and was hit by typhoon Morakot in 2009, seemed a good starting point for the research. Since the beginning of the research it was the idea to compare at least two cases with each other. I read a paper about the ecological park and got in contact with the author who also is the leader of the Tsou tribe. Via this person I came in contact with a village near the ecological park that also had a tourism industry. The biggest difference between the two villages was that the tourism industry was not as massive as in the first village. While going from one village to the other, I passed the third case study. Since I had found a village where the tourism industry was very present, one that had a tourism industry that was not as present as the first one, I now came across a village that did have tourism but after the typhoon it seemed that it was not very present anymore. Since they were located in approximately a 30 minute car drive from one another they had all experienced the same destruction of typhoon Morakot in 2009. Henceforth, I found these sites suitable for the research.

3.2. Regional context framework

This research took place in Taiwan. Taiwan is located in Eastern Asia, 120km of the coast of China, 355km north of the Philippines and 595km southwest of Japan, see figure 2.



Figure 2: Taiwan highlighted on the world map. Source: Geology.com (2008)

Taiwan has a total area of 35 801 square kilometres and is roughly about the same size of Switzerland. Taiwan is a very mountainous island, as 70% of the island is covered with rugged, densely forested mountains. Since Taiwan is the most densely populated country in the world, yet 70% of the island is covered by densely forested mountains, means that the majority of the people live in the urbanised western part of Taiwan. Taiwan has experienced a rapid rate of urban growth due to the combination of natural

increase and steady migration flow from rural to urban areas. Although this is not special, as underdeveloped countries have frequently the same pattern. What is special about Taiwan is the fact that they experienced rapid growth between 1953 and 1970 as being part of the four Asian Tigers together with Singapore, South Korea and Hong Kong (Speare Jr., 1974; Taiwanese Secrets, 2019). The rapid economic growth is also called the 'Taiwan experience' and was partly possible since Taiwan is perfectly located being the gateway to Asia (CEPD, 2010). Secondly, the industrial growth of Taiwan has been accompanied with agricultural productivity increases and land reforms, making the population growth bearable for the country and its food supply (Speare Jr., 1974).

Most people live in the urban areas on the west coast of Taiwan. Here, broad fertile plains, basins and tablelands can be found. There, most of the agriculture and industry is located, hence the pull factor of the area towards people (Taiwanese Secrets, 2019).

Since most people live in the urbanised west of Taiwan, the indigenous people live in the mountainous area in mid or eastern part of Taiwan. Hence this research will be conducted there. To be more specific, the research will be conducted on three Tsou villages located in Chiayi county in the Alishan township. In figure 3, Taiwan is shown with its counties, the green county is Chiayi county. Figure 4 shows a close up on Chiayi county, portraying the different townships within the county. When looking at Alishan township, the three research villages are portrayed.

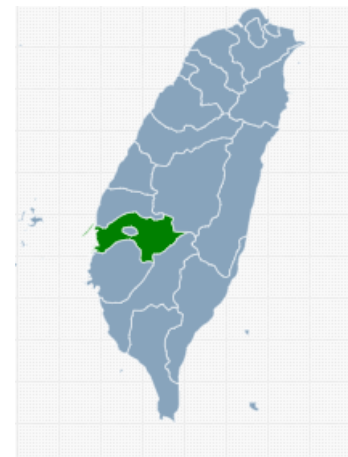


Figure 3: Taiwan with Chiayi county highlighted in green. Source: SimpleMaps (2019)



Figure 4: Chiayi County with research locations, source: Chiayi County Government (2019) edited by author.

3.3. The indigenous peoples of Taiwan

To understand the present situation of the indigenous peoples in Taiwan better, a brief history will be given. The overall history of the Taiwanese indigenous peoples will be given, thereafter the Tsou tribe will be introduced.

“Indigenous peoples are culturally distinct societies and communities. The land on which they live and the natural resources on which they depend are inextricably linked to their identities, cultures, livelihoods, as well as their physical and spiritual well-being” (World Bank, 2019, para. 1). There are roughly 370 million indigenous people worldwide that live in approximately 90 countries. Despite the indigenous people only make up for 5% of the population worldwide, they are with 15% overrepresented in the extreme poor population of the world. Also, the life expectancy of indigenous people can be up to 20 years lower than the non-indigenous people worldwide (World Bank, 2019).

History shows that the indigenous Taiwanese have been inhabiting the island for over 6500 years (Schubert, 2016; Williams, 1998). Nowadays approximately 540,000 people out of the 23,6 million people in Taiwan are considered indigenous Taiwanese. About half of the indigenous population lives in the mountainous areas and the less populated east coast of the island. Many young indigenous people have become industrial labourers in the cities on the west coast since the 1970s. Since the last 100 years, with special emphasis on the past 50 years, the living standards of the indigenous peoples have declined. Although most indigenous communities are incorporated into the modern capitalist economic system, most indigenous people do not have the skill nor the education to earn a decent wage. Hence, many young indigenous people ended up working dangerous and low-paying jobs in sectors such as fishing, construction and farming. A lot of women found themselves ending up in the prostitution prior to the 1990s (Chi, 2001). Although Taiwanese living standards have been improving since the 1990s, the socioeconomic status of the indigenous peoples have not been improving as well. According to the Council of Indigenous Peoples, an indigenous family income is only 43.6% of the national average (Chi, 2001).



The indigenous people of Taiwan have had many rulers. The Dutch came to the island in 1624 and took over the rule of the Spanish. In 1662 the Dutch flee the island because Koxinga drove them out, thereafter the Qing dynasty took control over most parts of Taiwan. During the rule of the Qing dynasty the discrimination of the indigenous peoples began. The belief of Sino-centric cultural superiority and paternalism of the Qing dynasty led to discrimination of the Taiwanese indigenous peoples (Huang & Liu, 2016). The Qing dynasty gave indigenous Taiwanese that assimilated to the Chinese cultural ways rights which were protected by the court. These were so-called 'cooked barbarians' (*shu fan*), these, by Chinese belief, could be further cultivated by education and eventually become civilized. Later on, these were called 'Plain Indigenes', who lived mainly on the lower elevations. On the higher elevations, the 'Raw Barbarians' (*sheng fan*) lived. These were the indigenes that were considered uncivilized and needed to be fenced off to prevent that these 'raw barbarians' would in any way affect the Han Chinese and the other way around (Huang & Liu, 2016). Due to the increasing population of Han Chinese in the western part of Taiwan the indigenous peoples got pushed onto the mountains.

In 1895 the treaty of Shimonoseki was signed which gave Japan the colonial rule over Taiwan. The Japanese launched another modernization project in Taiwan, which was unbeneficial for the indigenous peoples of Taiwan. The Japanese identified the 'Raw Barbarians' and classified them into different ethnic groups, those mainly occupied the Central Mountain Range in Taiwan, which runs from the north to the south of the island. The Japanese conducted surveys and made a map of the Central Mountain Range and declared that all unoccupied forest land belonged to the government and the indigenous peoples territory was limited to their residential territories (Huang & Liu, 2016). The lowland indigenous peoples were taught by the Japanese to grow rice and replace this for their slash and burn agriculture. The high mountain indigenous were forced to relocate to areas below 1500 meters above sea level. Approximately half of the indigenous peoples were forcibly relocated between 1903 and 1941.

The Taiwanese have had many rulers, that almost all wanted the indigenous people to assimilate to the rulers culture. Especially during the time the Han Chinese, the Nationalist government pursued three main goals which all had the focus of assimilating the indigenous societies to fit with the Han Chinese culture. The Han Chinese would take the land of the indigenous Taiwanese for their own use, which disrupted the traditional economy of the indigenous communities. The indigenous were also forced to learn the Chinese language and culture and they even had to adopt Chinese names.

The democratic transition in Taiwan took place in the 1980s, after the KuoMingTang (KMT, the nationalist political party) government abolished the martial law which freed the path for other political parties to run for presidency. This led to the first general elections in Taiwan in 1996, and the victory of the Democratic Progress Party (DPP). The indigenous peoples in Taiwan tried to ride the wave of democratic transition in their country and began the Indigenous Movement. This movement included cultural self-representation, political participation and the recognition of indigenous land rights (Kuan, 2010). Land rights and political autonomy stood highest on the agenda of the indigenous peoples. Three 'Return My Land' protests were held in 1988, 1989 and 1993. These protests went from asking for more land to claiming of indigenous sovereignty in the five year period. Eventually in 1997 the central government established the Council of Indigenous Peoples, which was a request from the indigenous peoples to be able to represent the highest office that is in charge of indigenous affairs from local to provincial to central to national level in the government (Kuan, 2010). The first result of the indigenous movement was the name rectification enacted in 1994 (Huang & Liu, 2016). The name rectification meant that the indigenous tribes could rename their communities to the names they had before the colonial suppression. Indigenous land rights in Taiwan is still an important

topic. Since their land has been taken from them, they have been limited in their cultural ways and livelihoods.

In Taiwan, 16 indigenous groups are acknowledged by the government, with each tribe having its own distinct culture, language, customs and social structure (Hualien Indigenous Peoples Department, 2019). The majority of the indigenous peoples live in the mountainous areas of Taiwan. As does the Tsou tribe, the tribe this study will be mainly focussing on. The map shown in figure 5 highlights the indigenous territory of Taiwan in light blue, important to mention is that the indigenous people do not own most of the land, and highlighted in red is the Tsou territory. With a population of approximately 6500 people, the Tsou tribe is one of the smallest recognized tribes in Taiwan. The Tsou tribe mostly lives in the Alishan Township of Chiayi County, Sinyi Township in Nantou County and Tauyuan and Namasia Township of Kaohsiung County. The tribe consists of the northern Tsou tribe and southern Tsou tribe, the focus of this study will be on the northern part of the Tsou tribe, also called the Alishan Tsou tribe.



Figure 5: Indigenous territory, highlighted in red: the Tsou tribe territory. Source: CIP (2010)

Before the Japanese colonial period, the Tsou society was self-sustaining by the practices of shifting cultivation, fishing, hunting and gathering. Whereas hunting was their main economic activity and shifting cultivation was practiced later on. These social and economic aspects of the Tsou tribe changed drastically during the Japanese colonial period. What happened to most indigenous tribes in Taiwan during the Japanese colonial period, happened to the Tsou tribe. The Japanese introduced the cultivation of irrigated rice and the planting of farm and forestry crops. The Tsou people were forced to farm cash crops and a money based economy developed. This transition led to the shift of the Tsou tribe from subsistence farming to more shifting cultivation farming, gradually changing into a market economy (Tao, 2006).

In 1945 the Nationalist Chinese government's policies designated the mountain areas to become like the plains and to make the mountain areas modernized. As a result of this, private land ownership, sedentary farming and forestry were introduced. These government policies also reserved lands for the indigenous peoples, which worked counterproductive since the reserved lands that belonged to the Tsou tribe was taken from them. Their hunting territory and agricultural land became state owned and this meant that the Tsou lost their rights to use, manage and access the resources.

Since the indigenous peoples were pushed onto the mountains, they have experienced an increase in their vulnerability to disasters. This, while living on a mountain is more prone to landslides than living on a plain when living in Taiwan, which endures heavy rain yearly.

3.4. Research methods

This chapter will focus on the research methods that were used during the research. Also the sampling methods of each method will be given, thereafter the method of analyses, the limitations of the methods of the research and sampling will be given. Lastly the ethical concerns will be stated together of how they have been dealt with.

This research is conducted using a mixed methods approach. The methods used in the research are semi-structured interviews, household surveys, observation and desk research. The reason for using a mixed methods approach is to be able to overcome the limitations of either qualitative and quantitative research. Whereas qualitative research, in the form of semi-structured interviews, can bring interesting insights to light, it takes up quite a lot of time and the number of respondents that can be interviewed are limited by these time constraints. Quantitative research has been conducted, in the form of household surveys, to increase the number of respondents of the research. Firstly, qualitative semi-structured interviews were used to get a better understanding of the situation at hand. Thereafter a survey has been designed with the gathered insights of the local situation. The survey enabled the research to get quantitative evidence of qualitatively gathered information. Desk research is used to gather information about Taiwan and its policies and online data about disaster risk management and disaster's impact on Taiwan and its policies.

3.4.1. Qualitative; semi structured interviews

This research is a case study of three communities where a mixed methods approach was used to conduct the research. Firstly, semi structured interviews were conducted for the gathering of data of key persons and institutions in the communities. I have spoken to former and active village heads and former and active leaders of development associations, in addition I spoke to people which were active in the tourism industry. Table 2 shows the list of interviewees and their role in the community or their occupation. Some interviewees I spoke twice since they were very knowledgeable. The codes are used to refer back to the interviews in the results section.

Table 2: Semi-structured interviewee list

Village	Role in community / occupation	Frequency of times spoken	Code
Shanmei	Ex police officer / teacher	1	Shanmei-1
Shanmei	Ex leader development association / Head of	1	Shanmei-2
Chashan	Ex leader of development association / ex head of village	2	Chashan-1
Chashan	Employee development association	1	Chashan-2
Chashan	Homestay manager	1	Chashan-3
Chashan	Homestay owner / leader of the Leisure and Agriculture Association	2	Chashan-4
Chashan	Culture dancer	1	Chashan-5



Village	Role in community / occupation	Frequency of times spoken	Code
Xinmei	Ex head of village	1	Xinmei-1
Xinmei	Leader development association	1	Xinmei-2
Xinmei	Store owner	1	Xinmei-3
Xinmei	Store owner / farmer		Xinmei-4
Taipei	Deputy minister of the Council of Indigenous Peoples	1	tibusungu é vayayana
Taipei	Assistant professor of Department of Anthropology of National Taiwan University	1	Su-mei LO

Semi structured interviews are best to use when researching complex interlinkages within a community. Semi structured interviews are able to go into depth and add more interesting in-depth information to the research (Adams, 2015). During the semi structured interviews topics such as ‘the tourism industry in the community’ and ‘the impact of the typhoon on the community and its tourism industry’ were discussed. More topics of the semi structured interview are mentioned in the topic list of the semi structured interview in Appendix A. The aim of the semi structured interviews was to get a more general idea of the type of tourism that was present in the communities, the organizations or institutions present and the recovery from after typhoon Morakot.

A disadvantage of a qualitative research approach is that it is slow and therefore I was not able to interview many respondents. This I tackled by using a mixed methods approach and made a survey to reach more people.

3.4.1.1. Sampling Method semi structured interviews

When using semi structured interviews, research tends to become more free and unconstrained, therefore snowball sampling will be a good sampling method. The disadvantage of snowball sampling is that the researcher has to watch out it does not only highlight one side of the story, since the first respondent can have a very specific social network which does not reflect and represents the whole of the community. To tackle this problem, not only one linear snowball sampling took place, but multiple, this to fit in the criteria of diversity of the sample group. During the research it became evident that without the permission of a key person in the village it was almost impossible to talk to people.

3.4.2. Quantitative; Survey

With the information gathered from the semi structured interviews, a household survey was developed. It was necessary to first conduct the semi structured interviews before developing a survey, as this would enable me to ask more specific questions. Topics that were mentioned in the semi structured interviews would therefore being used in the survey. The survey consist of five parts; A: personal background and household make up, B: Impact of typhoon Morakot, C: Occupation, either in

agriculture or tourism, D: Funding applied to and or received after typhoon Morakot and E: Statements that were answered with the use of the 5-point Likert scale. The survey was developed in English and later translated by two students from the National Taiwan Normal University into Chinese mandarin. We conducted the surveys preferable one on one, so that one translator sat down with one respondent and read out the survey to the respondent and filled it in. Sometimes the people which we wanted to conduct the surveys with did not have much time. This meant that we would conduct the surveys in groups where the translator would read out the questions and the respondents would fill it in themselves. I would walk around to check if the respondents did not leave parts blank and if they were maybe stuck at a question and the translator had already moved on to the next question. If this was the case I would draw the attention of the translator towards the respondent that was struggling.

3.4.2.1. Sampling method surveys

In all three research areas I was helped by a key person to gather the respondents to do the surveys. In Shanmei the head of the village told the people which worked in the ecological park that we would come by and that it would be appreciated if they could make some time for us when we ask them to participate in the survey. In Xinmei, the former head of the village put us in contact with the priest who holds Sunday mass in Xinmei. The priest invited us to his Sunday morning mass, thereafter we would be able to conduct the surveys with the people that came to the mass. In Chashan the former head of the village brought us door to door to ask people personally to participate in the survey. In Chashan we were a little more free to roam around and ask people ourselves to participate. This resulted in a better representation of the community than in the other two villages. Because in Xinmei the church community did the survey and in Shanmei the people that worked in the ecological park participated. A total of 50 surveys were conducted in the three villages with an average of 12%, see table 3.

Table 3: Sample size per village and total

Village	Total number of households	Number of surveys conducted	Sample size %
Shanmei	186	20	11%
Chashan	114	18	16%
Xinmei	120	12	10%
Total	420	50	12%

3.4.3. Qualitative and quantitative; Observation and desk research

During the research, observation proved to be very worthy. Some desk research was done before going to the actual sites and some information found online was wrong or misleading. With the use of observation, tourism activities and structures were found as well as the level of tourism, for example the difference during the week or in the weekends.

National policy reports are used to better understand the national context of the indigenous peoples struggles and the importance of tourism for the island. Datasets from the government are used in the research to gather the population size and precipitation records of the communities. Desk research is also used to understand local situations of communities and their organizations.

3.5. Methods of analyses

After the semi structured interviews I would write down the notes I made during the interview on my laptop the same day as the interviews were done. I did this the same day because then the interview would still be very present in my memory and by then is not yet clouded with many other interviews. With the help of the notes of the translator additional information or parts of the interview that was not translated yet could be added to the notes. I did not record and therefore not transcribe the interviews as I find this not of any added value when working with translators. Transcribing can be useful when you can derive information from the use of certain words, this is lost when working with a translator.

The data of the surveys have been put into one excel file. From this dataset I can derive certain linkages from the different villages. The excel file is missing too much data to do regression analyses with it, therefore the dataset is especially used to look at the statements part and to see which person answered what on the statements.

3.6. Limitations

Since many Taiwanese do not prefer to speak English, especially the indigenous peoples of Taiwan, a translator was necessary to conduct the interviews. Working with a translator brought about some hurdles. Before we dove into the semi structured interviews, we discussed the aim of the research and the questions I wanted to get answers to. Tips about translating were shared with the translator, who translated for the first time. The translator would, like me, make notes during the interview and these were discussed afterwards. This helped clarifying the data gathered. As a non-Chinese speaker, I tried to look at how people reacted to questions and learn some words to be able to understand which way the conversation was going.

Another limitation of the research was the fact that the approach to gather respondents for the survey was different in all three villages. The lack of uniformity of approach is a limitation to the research. As well as the fact that in Shanmei we conducted the surveys in the ecological park and not in the community itself made the representation of Shanmei limited to the people working in the park. I knew this beforehand, but due to the conversation with the head of the village, I saw no other possibility to conduct the surveys.

3.7. Ethics

This research focusses on disaster risk management and tourism of an indigenous community, researched on the household level. Since during the interviews data was asked about the income or level of education of the household members, confidentiality and anonymousness was given to the respondents of this research. This is provided by not naming the respondents in the results of this thesis and or in the datasets created after the surveys were conducted. The people that are named in the research are people with a key role in the community and therefore are named as such, these people are aware of this and were not given anonymousness.

Secondly, when discussing disaster risk management, something that could have been physically and or emotionally damaging to the respondents, both the researcher and the translator needed to be aware of the possible hurt that the respondents could have had and make sure that the respondents feel relaxed in our presence. All data has been securely handled and stored throughout the research. The survey data is only shared with people that were active during the research and needed the data for further research.

To thank the people which did the surveys, we brought small gifts from the National Taiwan Normal University.

4. Research areas

This chapter will cover information gathered about the research areas before diving into the results of the study. Little background of the villages will be provided, as well as information about their geographical location and the role of the development associations. This will help understand the result section later on.

The research is conducted in three separate villages, all part of one tribe, as mentioned in the case choice. A background of these villages will be given in the following section. Also some information of institutions within the villages will be displayed.

Three communities have been researched during this study. These are Shanmei Village (山美村), Xinmei Village (新美村) and Chashan Village (茶山村). Although the villages are located close to one another, see figure 6, and they are all part of the same tribe the circumstances of their geographical location and their community trajectories make them very different. The Tsou terrain has a big elevation difference, from 255 to 3950 meters. This means that, though the township area has a tropical/subtropical mountain climate, the temperature and rainfall of each village is very different. Resulting in different agricultural practices. As these villages are portrait, the tourism aspects of these villages are described in the result section.



Figure 6: Research areas, source: Google Earth edited by Author.

4.1. Shanmei

Shanmei is the most northern community of the three researched communities. Shanmei village was first built in 1929 consisting of around 610 residents nowadays (Chiayi County, 2018). The residents of the Shanmei community are mostly from the Tsou tribe. Prior to Japanese colonial period the village had around 30 households. Shanmei is surrounded by bamboo forest which is where most of the villagers get their income from, as this bamboo can be harvested year round. More recently products such as high-mountain tea, tea-oil plant (camelia), persimmons, ginger, corn, jelly fig, taro and short-time leafy vegetables are grown in the area. The people living in the Shanmei community are of the sub-part of the Tsou tribe called the *Saviki*.



Shanmei is primarily known in Taiwan because of Dannaiku ecological park. This is an ecological park developed for the fish conservation of the Zengwen river. In 1989 the people of Shanmei started the conservation of the nature area and the river, developing an ecological park. The plan to start a nature conservation already started in the 1970s, due to lack of road connection the park was not developed until 1989. Shanmei got connected to the road network in 1980, since then agricultural products such as high mountain tea have been getting a lot of attention from people from the outside. The park got established to replenish the fish population in the Zengwen river and its surrounding ecosystem. The 'gu-yu', Ku Fish, *Onychostoma Alticorpus*, a kind of cyprinid fish was being caught with poison and by using other harmful fishing methods, harming the environment and local fish population. The people from Shanmei took control over the situation and developed an ecological park and after the fish was successfully replenished and the ecosystem returned back to a healthy state, the park opened in 1995 for tourists.

Shanmei has a Development Association (DA) which started in 1992, with as goal to develop the tribe and to teach people to become guides in the tourism sector. The DA was established to have a better connection with the government and its ministries. The villages has an administrative office, a police station, a clinic, a recreation centre and an elementary school with nursery.

Shanmei is a catholic community, their faith preaches them to conserve their culture. This is according to the head of the village a good combination with what they practice, as the people of Shanmei try to do this by conserving the nature through the ecological park. Next to the Catholic church, Shanmei has two other churches, namely the Presbyterian and the True Jesus church.

Since Shanmei is a great example of ecological tourism in Taiwan, many researchers have gone here before to research the impact of tourism on the community. Consequentially, since Shanmei has been researched before, there is more information available than the other two villages.

4.2. Chashan

Chashan village is located at the source of the Zengwen river and was originally called "the plain on the mountain" by the Tsou people. As the most southern village of Alishan county, it is yet remote but easy accessible from bigger cities like Kaoshiung or Dapu. The village of Chashan is located between an elevation of 260 to 1600 meters and finds itself to be on an important three-road intersection between Alishan township and Koashiung. Chashan is the least populated villages in this research and has 301 residents. Also, Chashan is the most mixed community in regards of tribes. Chashan community consists of 50% Tsou, 15% Bunun and 35% Han people.

Chashan has a Development Association and a Leisure and Agriculture Association. The Leisure and Agriculture Association was very involved in the start of the tourism industry. After the typhoon Morakot this changed, the government of Taiwan developed stronger ties with the Development Association. Chashan has two churches, the Presbyterian Church and the True Jesus Church.

4.3. Xinmei

Xinmei has a population of 353 people (Chiayi County, 2018), only one household is Han and the rest is Tsou, located on an elevation between 400 to 800 meters. Xinmei has flat land and slopes which are suitable for agriculture, unfortunately the lack of fresh water prevents the agriculture to blossom. Nevertheless crops like ginger, taro, jelly fig and camelia are grown. Forestry is the main economic activity of Xinmei. Xinmei has a Development Association and an Organic Agriculture Development Association. Where the development association is working on the reintroduction of tourism, is the organic agriculture association there to help people transition to organic farming. People in Xinmei are

primarily Christian and with a very small population size it has three churches. Xinmei is located in the middle of Shanmei and Chashan, connected by one road to either villages.

4.4. Transport

All three villages are along route 129 that gives all villages access to roads that lead to Chiayi via route 3 or 18. It takes around one and a half hour to drive from Chiayi to Dapu, which is the village nearby Chashan and an hour to drive from Chiayi to Longmen, the village close to Shanmei. Both drives from Dapu to Chashan and from Longmen to Shanmei take about 15 to 20 minutes. To get from Chashan or Shanmei to Xinmei takes around half an hour. Busses drive sporadically from Longmen to Chashan, passing Shanmei and Xinmei on its way. This bus has a bus schedule, but only drives when the bus driver or the company feels like it on that day. This is understandable since the bus is not used by many people. Therefore the existence of that bus line is questionable, also because everyone in the villages has either a scooter, motor or a car.

4.5. Development Associations

Every village has a development association (DA). These associations their main goal is to develop the village and its community. This is mainly done by writing project proposals to the government and ask for funding. The funding is then used to finance the projects and pay the wages of the people working for the DA. In Chashan, when people want to be a member of the DA they have to pay a membership fee. The first year this is 1200 NTD (39 USD) and to stay a member the next year is 600 NTD (19 USD). In Shanmei this was different, when someone turns 20 years of age they automatically become a member of the DA. No membership fee is required since the ecological park brings in enough money which make the membership fees unnecessary.

All development associations started in the late 1990s when the government told the village leaders to establish a development association. The government told them to do this to be able to access the government easier and therefore be able to apply for funding. The government wanted every village to be able to apply for funding through the development associations. The former village leader of Xinmei said that sometimes the government would give the development associations fully written proposals. The DA then could look at the proposals and discuss which one would suit their community the most. They would pick one of the proposals and hand it back in to the government which then would approve the funding request.

The people that work for the development associations are people who live in the community. They get paid through the funding that comes into the association via the government. If the association does not get funding the people that work for the association are not paid. This means that the people working for the associations are very dependent on whether or not their funding requests are accepted.

5. Results

In the following chapter, the results of this research will be given. This will be a mix of qualitative and quantitative results. It will start off with a general introduction of the tourism in Taiwan which then will go into detail in the three different villages. Thereafter the impact of the typhoon will be analysed with special focus on the vulnerability, coping capacity and the access to resources of the three villages.

5.1. Tourism in Taiwan

The tourism development of Taiwan has influence on the results of this chapter, therefore it is important to have background information on the tourism in Taiwan before looking into the tourism of the research locations.

In the year 2000, the Taiwanese government developed “The Doubling Tourist Arrivals Plan”. The goal for 2008 was to double the number of people visiting Taiwan for tourism purposes to 2 million and to exceed the 5 million total visitors to Taiwan. The main strategies used to accomplish this goal were the following. First of all, the government wanted to update existing tour routes, especially Taiwan’s five greatest international tourist routes, such as North Coast, Alishan, Sun Moon Lake, Hengchun Peninsula and Hualien-Taitung. Secondly, the government wanted to develop emerging tour routes and destinations with the potential of becoming international tourist routes. This to balance regional tourism development and offer tourists new destinations. Thirdly, the Taiwan government wants to provide ‘total tourism and travel service’. This includes developing travel information networks, promoting tourism and counselling tourist spots as well as establishing a Taiwan tourism bus system and a round-island train service. This plan would help create consensus between private operators and government agencies on the need to adopt a ‘tourism embraced by all’ attitude. By working together, Taiwan can create a high-quality travel environment. Fourth, the Taiwan government used target management to attract more international tourists to visit Taiwan by tailoring tourism products to the needs of the visitors. The year of 2014 in Taiwan was known internationally as ‘the year of Taiwan tourism’ to increase the international visibility of Taiwan.

During the revamping of the existing tourists routes, one of the research areas of this study has been updated as well. As part of the Alishan tour route, the tourist infrastructure for the Tsou tribal district was completed. This meant that the Danaiku Ecological Park got a performing hall for their cultural dance show. Throughout Taiwan, 410 infrastructure development projects were completed at existing key destinations, such as the building of the performance hall. Additionally 194 new spaces were beautified and developed to create new destinations for tourists (Ministry of Transportation and Communication, 2008). To develop travel information networks, the government built 19 new tourist centres and upgraded information services at 42 tourist centres to provide tourists with improved access. To improve the travel networks, road networks were improved and bilingual signs were put in place. A more user-friendly travel environment was developed, such as more improved bathrooms and parking and rest places along the highways. With respect to the online marketing, Taiwan tourism set up a web portal. This to strengthen their position in the international market as a tourist destination. Taiwan also set up distribution agreements with 167 international travel agencies. They also invited companies such as National Geographic and Discovery Channel to film Taiwan to promote it visually. Collaboration with international travel books to provide potential tourists with more information was done. All together Taiwan made a great effort to promote its country and to upgrade the tourism attractions.

Hence the great results nowadays. In 2016, 10.69 million domestic travellers visited Taiwan, thereof approximately 7.5 million visiting as a tourist (Tourism Bureau M.O.T.C., 2016). The majority of tourists come from China, roughly 3.5 million in 2016.

5.1.1. Tourism in the three villages

This study focusses on three Tsou tribe villages; Shanmei, Chashan and Xinmei. These villages are in very different ways and intensity involved in the tourism industry. In this part, the tourism structures and differences will be laid out.

5.1.1.1. Shanmei

Shanmei is the village that is the most intensively involved in tourism of the three. The main attraction of Shanmei is its ecological park. All the tourism activities of Shanmei are to be found in this park and are all owned by people that live in Shanmei. The plan to develop the ecological park started in the 1970s, since there was no proper road connection the plan was postponed until the road connection was improved in 1980. Because of the betterment of the road, Shanmei was able to sell their agricultural products to people from outside of Shanmei. Therefore the access to technology influenced the access to market. Since the road connection, Shanmei was able to sell their products to the outside. Shanmei became famous because of their high mountain tea. While people from the outside came and visited Shanmei, the community saw more tourism opportunities. Eventually the Shanmei Tourism Promotion Committee, which was established in 1987 and comprised of the head of the village and seven other members, proposed to the government to establish a park for the betterment of the nature and its fish. To do this, the access to authority was used by the committee to propose the idea to the government, which turned it down twice. Without the external support of the government but with the leadership of the committee and local support, the ecological park opened for its visitors in 1995.

The pre-existing cooperation which cleaned up the river to conserve the fish was useful by establishing the ecological park. Two other factors were the road connection, which brought people to the Shanmei community and the attractiveness of the area. Shanmei therefore had the ingredients to develop a successful tourist attraction.

During the week the park is mostly visited by Chinese tourist that come with tour busses. Forty to fifty tour busses every day drive up to the park during the week days. In the weekends this can be up to 70 tour busses, the increase is mostly from Taiwanese people that visit the park on the weekends. To get into the park, an admission fee needs to be paid, see table 4.

The opening hours of the park are from 8 am to 5 pm. The prices to get into the park have been the same since the beginning. The money that comes in from the ticket sales is used to pay for the development association of Shanmei and the people that perform culture shows in the park.

The park is located outside of the Shanmei community, as seen in figure 7. To isolate the community from the tourist attractions has not been on purpose. The conserved river with the fish, which is the biggest attraction of the park, just happened to be outside of the community.

Table 4: Danaiku Ecological Park entrance price. Source: Author's research

Full Price	100 NTD / 3,20 USD
Normal Discount	80 NTD / 2,60 USD
Group bigger than 30 people	80 NTD/each / 2,60 USD/each
Children under 6 years old	FREE



Figure 7: Shanmei Village and Tourism attraction, source: Google Earth edited by Author.

In the park, visitors can find several attractions. Namely, visitors can go to the river and feed the fish (cost is 10NTD/0.32USD for a small amount of fish food), over the river valley is a very big expansion bridge that the tourist can walk onto and take pictures of the mountainous surroundings as shown on figure 8.

In the park are several shops that sell tea, coffee, rice wine and other local products. Handicrafts are also sold in shops. Food is served in restaurants that primarily serve barbequed meat and fish (see figure 9), also

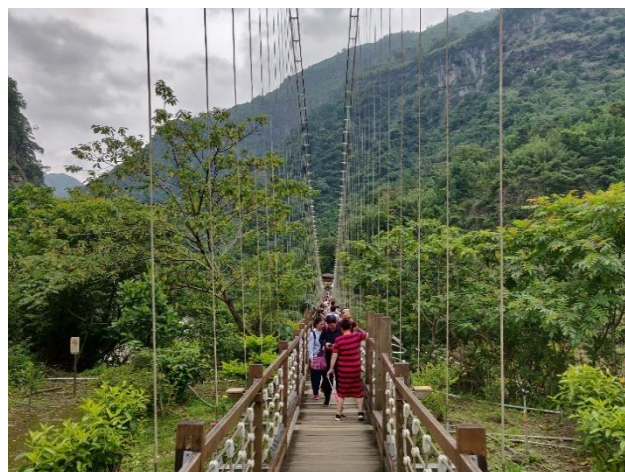


Figure 8: Expansion bridge Danaiku Ecological Park in Shanmei, source: Author's research.



Figure 9: Traditional barbeque in Danaiku Ecological Park, source: Author's research.

bamboo rice is a classic dish they sell. Recently a coffee shop opened which sells both coffee and handicrafts. Tourists can also visit the cultural show, which is performed three times a day. The hall, see figure 10, can fit roughly 600 people that can watch the cultural show that is performed for them for free.



Figure 10: Shanmei performance hall, source: Author's research.

Tourists in Shanmei primarily come for a one day visit were they visit the ecological park. Shanmei community does have 2 homestays. The homestays can roughly fit a total of 3 tour busses full of people, one homestay can fit one tour bus full of people and the other one 2 busses. The tourists visit the ecological park year round.

Anyone that lives in Shanmei can open a shop if they have enough money to do so. Some people that do not have enough money to open a shop in the park cooperate with others to do so.

From the beginning, the people of Shanmei have seen tourism as a way to bring back the youth to the community. Since the community only has an elementary school and the children have to go to Chiayi to go to high school or university, most children stay away after they finished their education. With the tourism industry, new jobs and opportunities open up for the youth.

5.1.1.2. Chashan

Chashan is the community that is the most southern community that was researched. Chashan tourism mainly consist of people that spend a weekend in the mountains. Chashan has therefore also the most homestays, when compared to the other two communities. The homestays and other tourism attractions are all owned by the people of Chashan.

The road to a successful tourism industry started when the former head of the village (Miss Lee, 李玉燕) went to a conference in 1996 about tourism and beautification of places. During this six day conference, professors from different countries shared their stories and Miss Lee got inspired. Miss Lee had also visited countries like Switzerland, France and Germany. By visiting these countries, Miss

Lee got inspired to beautify her own tribe. To be able to do so, Miss Lee applied for funding through her proposal called 'A place for our culture environment, beautiful as a park' (部落生態公園). The community received the funding in 2000 and improved the community. Since she was part of the name rectification movement, the movement to change the names of the indigenous villages back to their indigenous names, she knew people that had become important people in the government. Instead of having to go through the process of applying for funding, she was able to speak directly to the person in power. With the gained access to knowledge and access to social relations she got access to authority. This access to authority got her the funding she needed to beautify her community. The tourism started gradually after the implementation of the plan to beautify the community. More and more people from the outside were coming to the community. At one point the tourists kept asking why there were no homestays to facilitate the needs of the tourists. With the use of more funding the community built a few homestays. This led to more tourism, which led to the need for more restaurants in the village. The community saw the potential of tourism and started to think about developing more tourism attractions. Due to the leadership of Miss Lee, the tourism industry was able to develop in Chashan with the use of external support from the government in the form of funding.



Figure 11: Culture dance show, source: Author's research.

the making of Moichi, which is a local desert. Tourists can also enjoy water activities, such as going down a river stream or swimming near a waterfall.

The Development Association of Chashan works together with the homestays. When people call the DA they can book accommodation through there. The DA will provide the culture show as well as the making of the Moichi and the archery experience, see figure 12. When homestays bring their guests to the shows, the homestay will pay the DA for their show and additional activities. In this way they, the homestays and the DA, help each other to have paying customers. Not only the DA and homestays work together, but also the homestays help each other between themselves. Some homestays are very popular and have a proper outreach through internet. When these homestays are fully booked, but more people want to visit the community, the homestays direct the tourists to other homestays in Chashan.

Nowadays there are 9 homestays in Chashan with a total capacity of 300 beds. Tourists that visit Chashan can do activities such as a community tour where you can hike and in the evening tourists can watch fireflies. They can visit a place called 'fire and water' where there is a water pond and a place where natural gas escapes the earth and when lit an eternal flame appears. Tourists can enjoy the culture show in the evening or sometimes during the day, see figure 11, mostly followed by archery, as shown on figure 12, and



Figure 12: Archery experience at the Chashan culture show, source: Author's research.

According to some respondents, everyone in the community benefits from the tourism. When the household does not have a homestay, they might have a shop or are farmers that sell their agricultural products to shops and or restaurants. Additional to the tourists that stay in Chashan themselves, there is a city close to Chashan that brings their tourists to Chashan. This city, Dapu, sells a tour package that has the selling point of visiting an indigenous community and experiencing indigenous activities.

The tourists visit the Chashan community primarily on the weekends. This has made the youth able to help in the tourism industry. Children that go to school in Chiayi come back during the weekends to perform a dance in the culture show and help with other tourism activities. These children get some money to perform their dance for the tourists and with this money they are able to visit other places for fun and some of the money can be used for study materials such as books and paper. The demographic of Chashan changes from weekdays to weekends. Since the aging of the community was also an issue in Chashan, tourism is seen as and proved to be a solution.

Other than at the Shanmei and Xinmei community, the tourists walk around in the community of Chashan, since the tourism activities are in and around the community.

With regards to access to knowledge and the sharing of it. The development association of Chashan has been looking at the management structure of the development association in Shanmei and learned to have a more holistic organization. They also learned to have more people working for the development association, as this would enable people to specialize on certain topics within the organization. Chashan development association also looked at the cultural activities performed in Shanmei and took these as an example when they developed their own cultural activities for the tourists. Throughout the years Chashan has won two prizes for the 'best model to beautify the tribe' in 2014 (left) and 'best model of community development association' in 2012 (right).



Figure 13: Left: Best model to beautify the tribe in 2014. Right: Best model of community development association in 2012. Source: Author's research.

5.1.1.3. Xinmei

Xinmei its tourism industry is the least developed of the three villages that are researched. Although the Xinmei brochure is full of activities, not many were observed during the research. Activities mentioned in the brochure are; community tour, hunter experience activities, barbeque dinner,

unplugged concert, camping, hunting trail experience, farming experience and indigenous lunch. As mentioned in the brochure and observed during the research, there is a camp site where people can spend the night. There are no homestays in Xinmei. The campsite was recently built since the development association of Xinmei got funding to build the place. The tourism in Xinmei is mostly on the weekends when the Taiwanese have free of work, the Chinese that visit other places also during the week are not likely to camp. Due to the fact that people have to sleep in tents, the tourism is seasonally. During the very hot months of the year and the months with heavy rain no tourists come to Xinmei.

Xinmei had more tourism before typhoon Morakot in 2009, but due to the destruction of the selling point of Xinmei, the hiking trails, not many tourists returned. Xinmei has been struggling to get back on their feet after typhoon Morakot with regards to tourism. Before the typhoon most tourists were brought to Xinmei by people from Shanmei and Chashan to enjoy the hiking trails. The location of Xinmei also has effect on the popularity of the tourist attractions.

Xinmei is a community with relatively many old people. Children have to go to Chiayi or another big city after they have finished elementary school. Since there is not as big of a tourism industry, as observed in Shanmei for example, children do not come back home as often to work in the community. Same as in Chashan, people of the community were invited by the government to attend conferences about tourism and beautification of villages. Therefore access to knowledge to start a tourism industry was the same as in Chashan. Access to knowledge is also gained through interaction between Xinmei, Chashan and Shanmei, although respondents from Xinmei do not agree with the statements from respondents in Chashan and Shanmei about either the sharing of knowledge or they might not have agreed with the ideas of Chashan and Shanmei for Xinmei its tourism industry.

The Development Association of Xinmei does have plans to improve their tourism industry by making it different than Shanmei and Chashan. Because of the struggle of the geographic location of Xinmei, mentioned in the next section, Xinmei wants to offer the tourists something special they cannot experience in the other two communities. The former head of Xinmei was thinking about developing homestays in Xinmei, they would be different than Chashan because the ones in Xinmei would be in people their own houses and not too commercialized as in Chashan is the case according to the former head of Xinmei.



Figure 14: Xinmei Village, church on the left and part of the residential area on the right. Source: Author's research

5.1.2. Impact of geographical location on tourism

While doing research I found the location of the villages being of great importance to the level of tourism in each village. Shanmei is namely located closely to the city of Alishan which is a well-known tourist attraction of the Alishan scenic area. Also, Shanmei is the first village with any tourism attractions you encounter when getting on route 129 from Chiayi, which is the route all three researched villages are located on. The river where the fish are preserved is not inside of the Shanmei community and therefore the tourism industry could become as big as it is today. This would have probably caused backlash from the community when as many tourists come through the streets of their community every day. Therefore, due to the location of the tourism attraction being outside of the community it could have grown to its full potential.

Chashan is located near the city of Dapu and is the first village with tourism attractions you encounter when driving up route 129. Chashan is also the closest indigenous village to Dapu, therefore Dapu sends its tourists to Chashan to experience indigenous culture. Due to the fact that Chashan's tourism attractions are located within the community, other tourism is observed. Tourism in Chashan is more cultural engaging and not as massive and driven on money than Shanmei.

Xinmei is locked within Shanmei and Chashan, geographically and figurative, as seen in figure 15.



Figure 15: Three Research Villages, source: Google Earth edited by Author.

Meaning that Xinmei's tourism has not been able to flourish due to the two tourism attractions around them. As the former head of Xinmei stated, people will not drive past Shanmei or Chashan since they have all the tourism people are looking for when they drive up to the mountains. Before the typhoon Xinmei was special because of their beautiful hiking trails along the river. Unfortunately they have been destroyed and now have similar tourism attractions as Shanmei and Chashan. The development association of Xinmei has been thinking a lot about different approaches to tourism to lure the tourists beyond Shanmei and Chashan, as of yet this has not succeeded.

5.1.3. Cooperation between the three villages

The Shanmei head of village stated that the Alishan National Scenic Area, a governmental organization, is promoting the tourism in the three villages in the south. The three villages in the south being:

Shanmei, Chashan and Xinmei. It was stated that tours are given to visit all three villages, but the same as the brochure of the tourism activities in Xinmei, it was not observed during the research. Shanmei is aware of their leading and exemplary role in the tourism industry in Taiwan, therefore they do not shy away from sharing their knowledge with other communities that would like to flourish in the tourism industry. The head of the village stated that tribes throughout Taiwan come to Shanmei to observe how Shanmei developed its tourism industry.

5.1.4. Impact of tourism on community and household development

The impact of tourism on the community is felt especially in Shanmei and Chashan, since these communities have an active tourism industry. Shanmei earns a lot of money with the park fees and can invest this money in the development of the community. The development association uses this money for example to make it possible that nobody has to pay a membership fee to be part of the development association. Nevertheless, according to the survey, 7 out of the 20 surveys conducted in Shanmei state that their household benefits lesser (or not at all) than the community does from the tourism industry. This is percentual the highest among the three villages. This might have been caused by the fact that the development association is in power of most of the tourism industry and therefore the DA reaps the benefits. This while their average score on the statements 1 and 2 are consecutively 3.9 and 3.7, therefore agreeing with the statements that the community and the households benefit from the tourism industry, see table 5.

In Chashan, lesser households feel that they benefit lesser or not at all from the tourism industry than the community does. This could possibly be due to the access to the market of tourism in Chashan being more accessible than the one in Shanmei. Since the tourism industry in Chashan is smaller, the hurdle to be part of it might be smaller than it would be the case in Shanmei. Shanmei and Chashan are both agreeing with the statements, whereas Xinmei is neutral and leaning towards disagreeing with both statements, which was expected since their limited involvement in tourism.

Table 5: Benefits felt by the community and the households, source: Author's research. Use Liker scale: 1: Completely disagree. 2: Disagree. 3: Neutral. 4: Agree. 5: Completely agree.

	Community benefits from the tourism industry Average	Household benefits from the tourism industry Average	Community benefits but household does lesser or not¹	Household benefits but community does lesser¹
Shanmei	3,9	3,7	7	1
Chashan	4,1	3,7	4	1
Xinmei	2,9	2,7	2	0

5.2. Typhoon Morakot

This chapter will analyse the impact of typhoons on Taiwan, focussing on typhoon Morakot from 2009. Causes of the impact of the typhoon will be analysed nationwide, thereafter the focus will be on the research locations. Thenceforth, the vulnerability of and the impact of the typhoon on the

¹ When the answers on the statements 'community benefits from the tourism industry' and 'household benefits from the tourism industry' were apart 2 or more points on the Likert scale, it is interpreted as agreeing to the community benefitting more than the households or vice versa.

three research areas will be analysed. Next to the impact of the typhoon, the recovery of the villages will be analysed, focussing on the access to resources of the three different villages.

5.2.1. Taiwan and Typhoons

The frequency of extreme rainfalls and typhoons since 2000 have exceeded the occurrence frequency between 1970 and 1999. This is problematic because these events cause severe casualties and economic losses (NCDR, n.d.-c). Typhoons are the most threatening weather phenomenon known to Taiwan. Many typhoons are formed in the west North Pacific every year, on average only three to four reach the land of Taiwan or have a significant influence on the island (Chien & Kuo, 2011). As typhoons are to be known as weather events with a lot of rain and heavy winds, the island's mountainous range is the major reason for the destructiveness of the typhoons. This because the central mountain range can deflect the direction of an approaching typhoon and thereby modify its winds and pressure patterns causing enhanced precipitation and heavy winds (Chien & Kuo, 2011).

5.2.2. Typhoon Morakot

Typhoon Morakot came to land on the 6th of August in 2009 and broke all records for almost all meteorological observed data, surpassing Taiwan's annual rainfall of 2500mm within 5 days. The typhoon and the disastrous events related to the typhoon killed 620 people, 80 people went missing and caused approximately NT\$90 billion (2.87 billion USD) in total direct property losses. The rainfall caused by typhoon Morakot is ranked in the top 20 of Taiwan's rain events. Typhoon Morakot is ranked the most severe natural disaster caused by a typhoon in the past 50 years (Hong, Lee, Hsu, & Kuo, 2010) and the deadliest typhoon in recorded history of Taiwan (C.-W. Lin et al., 2011).

5.2.3. Causes for the impact

The rainfall of the Morakot typhoon caused flooding and landslides throughout Taiwan. According to Li et al. (2014) there are four main causes behind the flooding, first of all, the rainfall exceeded the drainage systems capabilities and therefore flooded many parts of the country. The flooding was also caused by the deposition of debris in rivers. A lot of stone and mud was flushed into the rivers which clogged up the streams, causing flooding. The flooding of many parts of the country resulted in damaged river banks which led to more flooding since the river banks could not serve their role as protection measure. Lastly, many areas that are suffering from land subsidence were easily flooded. During the typhoon Morakot, 1690 landslides were recorded. Most landslides occurred in the Mountainous parts of Taiwan and were caused by a number of factors. First of all, excessive rainfall for hours led to landslides in many places, especially in southern Taiwan where the geology is mostly comprised of mudstone, sandstone and shale. Due to these types of stone the surface is very fragile making it prone to landslides (Li et al., 2014). Another factor making the mountainous areas fragile is the type of usage of the land. Tea, betel nut and bamboo production are all contributing to land- and mudslides. The change of the natural environment is also due to the development of road structures. The concentration of roads in certain areas contribute to the loss of roadbeds leading to the collapse of these roads, causing more landslides to occur. Lastly, a number of earthquakes around the scale of 5 on the Richter magnitude scale occurred in central and southern Taiwan before the typhoon. These earthquakes loosened the ground which made it more prone to landslides.

5.2.4. Impact of typhoon Morakot on research location and an analysis of coping capacity

Typhoon Morakot had an immense effect on people their lives, as it is recorded as the deadliest typhoon in Taiwanese history. Economic losses were mostly felt in the agricultural and tourism sector. The agricultural losses have been approximated at NT\$15.8 billion (503 billion USD), which include crop losses and the loss of livestock. The tourism sector lost approximately NT\$4.5 billion (143 million USD),

this has been calculated by the lost income due to the fact that the tourism spots became inaccessible because of damaged roads.

Shanmei, Chashan and Xinmei are all located on a mountain, which makes them physically vulnerable, hence they are all affected by typhoon Morakot. All three communities are connected with each other and the bigger cities around them by roads that have to cross valleys via bridges. Typhoon Morakot destroyed most bridges that connected the three villages with each other and the outside world. Some houses got destroyed by the typhoon in all three villages, nobody got killed or severely hurt. All three communities farm crops on the hillsides of the mountains and therefore all three communities lost crops due to the typhoon and the landslides that it caused. Not only did the typhoon hurt the people their livelihoods, the typhoon also changed some aspects of the nature around them. The former head of the village of Xinmei said that the typhoon changed the biodiversity in the river and widened the river. The head of the village in Shanmei confirmed this, since their tourism is based on the ecological park they preserve, changes in nature have great impact. The main purpose of the ecological park was to preserve the fish population and when the typhoon washed away some of the fish, this had a big impact.

The typhoon had impact on the livelihood of the people from Shanmei, Chashan and Xinmei. Road connections were lost, houses got destroyed or damaged, crops got destroyed and the environment changed. The tourism industry of the three villages was also affected.

The bridges connecting the communities with each other and with the bigger cities nearby got rebuilt. The government and the Red Cross² rebuilt the bridges. Some temporary bridges built by the government were built after 3 months. Unfortunately these bridges were not sturdy enough and did not survive during other periods of heavy rain. Some bridges got rebuilt after 1 year and some after 3 years.

Coping mechanisms in the three villages were quite similar. All three villages have a container filled with food and medicine for the community in times of a disaster. Until typhoon Morakot this was the coping mechanism of the community, provided by the government.

As the physical vulnerability and the impact of the typhoon, as stated above, was applicable to all the three villages the social vulnerability between the villages and the households within these villages will be analysed. Further the differences between the impact on the villages and their tourism industry will be stated below. Together with the impact felt, coping capacity of the villages and the households will be analysed.

5.2.4.1. Shanmei

Table 6 shows the number of respondents having been impacted by typhoon Morakot in Shanmei. Households that were impacted by the typhoon were mostly impacted on more than 2 categories, this is true for 12 of the 15 respondents out of the total of 20. The impact of the typhoon was most severe in the category of agricultural losses, as well as the loss of income was felt severely.

² An international humanitarian NGO

Table 6: Typhoon impact on category and severity in the Shanmei village, source: Author’s research.

	# of Impacted households	% of total households	Very severe	Severe	Not severe
House structure	12	60%	4	3	5
Personal belongings	10	50%	2	2	6
Work equipment	10	50%	2	6	2
Agricultural losses	15	75%	8	4	3
Loss of income	13	65%	4	7	2

In Shanmei, as mentioned, the fish population that is vital for the ecological park got partly washed away. Buildings in the park that functioned as shops and restaurants got damaged and needed to be rebuilt and repaired. It took Shanmei 2 years to rebuilt most of the park. Since people that normally worked in the park did not have income from the tourists anymore they were offered 100NTD (3.2 USD) per day when they helped rebuilding the park. The development association of Shanmei played an important part in this process. They asked the government for funding to rebuilt their tourism industry. The development association received the money and distributed it among the people that helped to rebuilt the tourism attractions. Not only the government funded the rebuilding of the park, Chinese people that had visited the park also sent money to the park to enable the people to rebuilt the park. According to the people from Shanmei, the Chinese did this because they found the park beautiful and wanted it to be restored to the way it initially was. The money earned by the ecological park was also used to recover from the typhoon. The access to capital is vital to the quick recovery of the park. Although Shanmei has proper access to authority and was able to get funding from government agencies, they could already start rebuilding the park with their own capital before they received the funding.

The suspension bridge in Shanmei, that was adored by tourists, got destroyed by the typhoon. The Red Cross saw that the bridge got destroyed and opted to rebuilt it. Since the typhoon widened the river, the bridge that was built back is longer than it was before. The suspension bridge in Shanmei is therefore one of the biggest in Taiwan.

Figure 16 shows the results of the statement ‘The rebuilding of the community after typhoon Morakot was done in an acceptable amount of time’. Nobody completely disagreed with the statement and the majority agreed and completely agreed with the statement. According to the deputy minister of the CIP, Shanmei was helped first of the three villages because of its important role in the national tourism economy. Therefore the government was more eager and quicker to help Shanmei, which is reflected in the answers presented in the bar graph of figure 16.

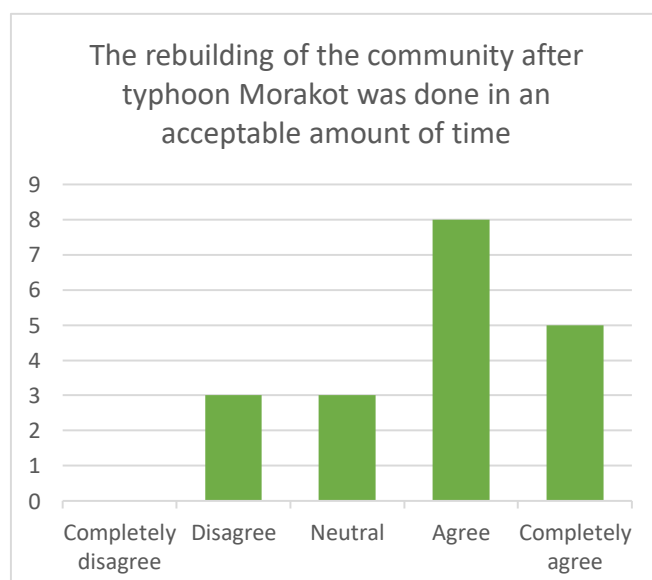


Figure 16: Bar graph of statement #8 answered by 19 out of 20 Shanmei Households, source: Author’s research.

Because Shanmei is seen as an important player in the tourism economy of Taiwan, the access to resources Shanmei has is far reaching and therefore the social vulnerability is rather limited. Access to capital; cash of their own to start rebuilding as well as funding from the government, technology; roads and bridges that are rebuilt in a smaller timeframe than any other nearby village because of hierarchy in level of tourism involvement. Due to the quick rebuilding of the roads and the park, the park could open quicker than surrounding tourism attractions which gave Shanmei access to the market of tourism before others could. Because Shanmei is such a leading example of community-based tourism in Taiwan and they have an important role for the country's tourism industry they have quick and easy access to authority. This political trend is important in analyzing the vulnerability context of Shanmei. Since the government has a big interest in restoring the tourism industry as soon as possible after typhoon Morakot, the shock of the typhoon is coped with rather quickly.

The two following figures show the difference from 2005, before typhoon Morakot, to 2017, after typhoon Morakot. The old suspension bridge and the old bridge are shown in figure 17 along with the riverbed before the typhoon. In figure 18 the newly built bridges are pinpointed as well as the widening of the riverbed.



Figure 17: Shanmei before typhoon Morakot, source: Google Earth edited by author.



Figure 18: Shanmei after typhoon Morakot, source: Google Earth edited by author.

Shanmei village serves as an illuminating example of how rebuilding of a community can serve to strengthen community bonds. As mentioned before, the park opened in 1995 and was very successful in the beginning years. After the park was open for 5 years it started to receive critical comments from the outside. People within the community wanted to change some aspects of the park which led to discussion within the community. The park lost its popularity and it was not until after the rebuilding of the destroyed park after typhoon Morakot in 2009 that the park became famous again. People in the community grew closer to each other since they needed to rebuilt the park together. The togetherness of the people translated into a successful park. The togetherness of the community shows itself when looking at the data from the survey. Statement number 9: ‘The people of the community have become closer after typhoon Morakot’ has an average outcome of 3.9³, therefore the community agreed with the statement. After 2 years the tourists came back and the park started to flourish into the successful tourism attraction as it is today. Statement 7 of the survey ‘After typhoon Morakot, tourism became more important in the community’ had an average score of 4.6 and therefore it can be stated that tourism has become more important after typhoon Morakot.

In one part of the Shanmei community stood old houses that nobody lived in. These houses were severely damaged due to the typhoon and could not be of any use to the people living in the community. These houses or the remainder of what was left got removed and new houses were



Figure 19: Shanmei new houses built after typhoon Morakot, source: Author's research.

3 The average was made up from 19 out of the 20 households, since 1 household filled in ‘do not know’.

built in that place by the government. As seen in the picture of figure 19, the houses all look uniform. When looking at the houses built in the relocated Chulu community near Chiayi, similar houses are observed.

5.2.4.2. Chashan

In Chashan some houses got destroyed by the typhoon, the people living in those houses got relocated to the Chulu community close to Chiayi city, which will be elaborated on in a later section. Some powerlines in Chashan broke because a tree fell on it during the typhoon. Table 7 shows the impact of typhoon Morakot on the households of Chashan. Loss of income is felt by most households, thereafter agricultural losses.

Table 7: Typhoon impact on category and severity in the Chashan village, source: Author's research.

	Impact #	% of total households	Very severe	Severe	Not severe
House structure	12	66%	1	1	10
Personal belongings	10	55%	4	2	4
Work equipment	7	39%	3	2	2
Agricultural losses	13	72%	5	5	3
Loss of income	16	89%	5	8	3

The tourism industry was affected by the typhoon, this was mostly because it took 3 years before the tourists came back to the community. The first year that the tourists stayed away was caused by the bridge that connected them with the outside was destroyed and it took the government one year to rebuild it.

In the two figures below, 20 and 21, the difference is shown as a satellite picture from 2005 and 2017 show the differences. The old bridge got washed away by the typhoon and was replaced for a sturdier and bigger bridge. This was necessary because the river got wider as seen on the figures below.



Figure 20: Chashan before typhoon Morakot, source: Google Earth edited by author.



Figure 21: Chashan after typhoon Morakot, source: Google Earth edited by author.

A homestay owner stated that it took another 2 years before the tourists came back because the government told people not to go to the community out of safety issues. The community invited a reporter from the government to see for him/herself that it was safe to travel to their community. The development association used its access to social relations and authority to reach out to the government reporter. The reporter put out a statement saying that it was completely safe to travel there and the tourists came back gradually. With the help of the government, Chashan managed to re-establish its own tourism industry.

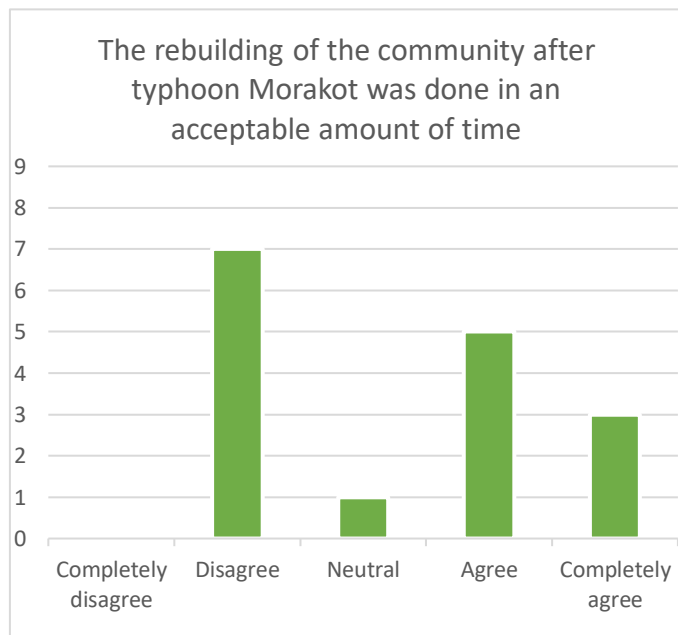


Figure 22: Bar graph of statement #8 answered by 18 out of 18 Chashan Households, source: Author's research.

The survey conducted in Chashan shows that almost half the respondents disagreed with the statement 'The rebuilding of the community after typhoon Morakot was done in an acceptable amount of time', presented in figure 22. When analysing the data from the survey, no differences can be found between the people that agree and the people that disagree with the statement.

According to some elderly people from the community, people got lazy after the typhoon. This was because the people could get funding easily and the funding was too much. This led to a situation that people stopped helping each other for free. During preliminary research in Chashan this story came up several times. Therefore I stated the following in the survey: 'The people of the community have



become closer after typhoon Morakot’. An average of 3.2 came out of the survey, with 7 out of the 18 respondents answering that they disagreed or completely disagreed with the statement.

One homestay owner said that without the funding he would have been able to recover from the typhoon. *‘It did help, but was not necessary’* (Chashan-4, semi-structured interview, June 1, 2019). This view is not the same as others in the community. Only one other household felt this way, the thing both households have in common is that they are Han and therefore not part of an indigenous tribe. Most households needed the funding to fully recover from the typhoon.

As mentioned before, Chashan has two associations, the development association and the Leisure and Agriculture Association. Interestingly, there has been a shift of involvement with the community after typhoon Morakot. Before typhoon Morakot, the Leisure and Agriculture Association was much involved with the tourism industry of Chashan. After typhoon Morakot took place, the government wanted to have one central association in every community with whom they could speak to and help the local people. Since every community has a development association, but not every community has a Leisure and Agriculture Association, the government found it easier to have the same associations represent the villages. The government now works closely together with the development associations and therefore the access to authority and thus access to capital, technology and market shifted from the Leisure and Agriculture Association to the development association in Chashan. The founder of the Leisure and Agriculture Association stated that due to the change he no longer has access to the proposals of the government. Nowadays the government goes to the development associations with an idea for the tourism industry in the community. But when the development association does not like the plan, it will not be available for other people in the community that might be interested in the proposal of the government. Previous typhoon Morakot, the government would also contact his association, but this has stopped since the government has strong ties with the development association.

5.2.4.3. Xinmei

10 Out of the 12 households were impacted by the typhoon in Xinmei, see table 8. Similarly to Shanmei and Chashan, the impact on categories ‘agricultural losses’ and ‘loss of income’ are felt by the most households and are also the categories that are impacted most severely.

Table 8: Typhoon impact on category and severity in the Xinmei village, source: Author’s research.

	Impact	% of total households	Very severe	Severe	Not severe
House structure	5	50%	0	1	4
Personal belongings	5	50%	0	2	3
Work equipment	4	40%	1	2	1
Agricultural losses	8	80%	3	1	4
Loss of income	7	70%	2	2	3

Xinmei did have a tourism industry before typhoon Morakot in 2009. Xinmei’s attraction was their beautiful hikes along the river banks. Tourists from Shanmei and Chashan would be brought to Xinmei to enjoy the great hikes along the river. Unfortunately, the typhoon widened the river and with this also wiped out the hiking trails. The figures below, 23 and 24, show the impact of the typhoon on the natural surroundings, especially the widening of the riverbed.

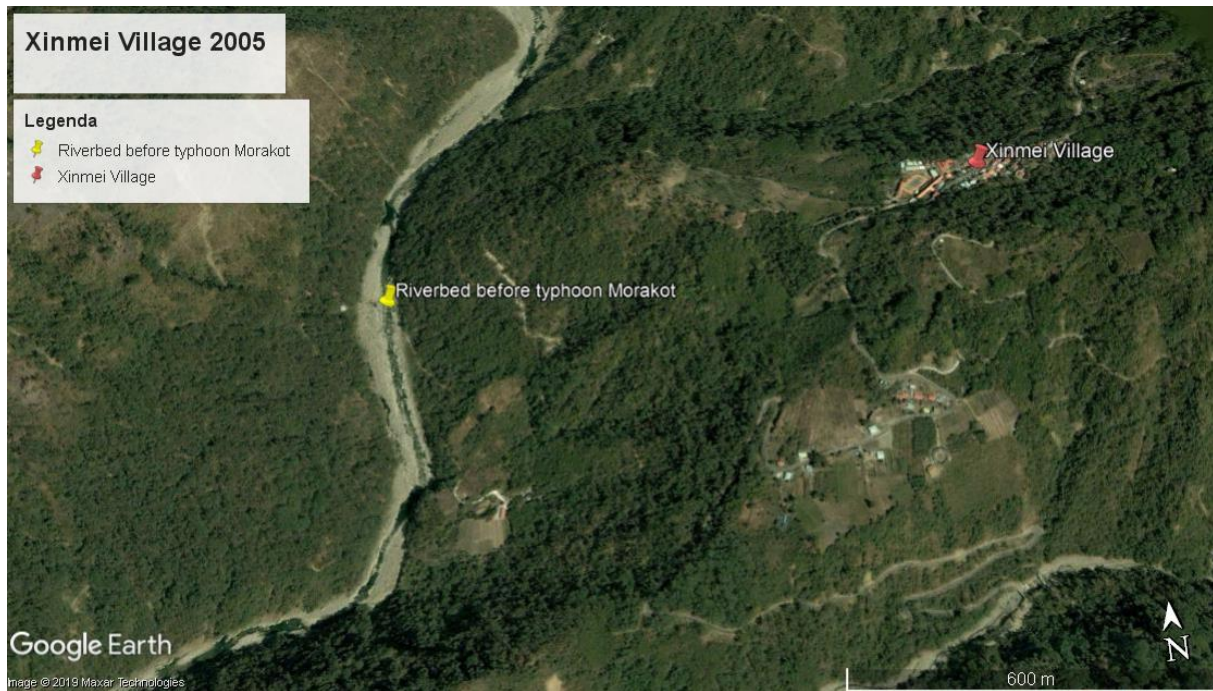


Figure 23: Xinmei before typhoon Morakot, source: Google Earth edited by author.



Figure 24: Xinmei after typhoon Morakot, source: Google Earth edited by author.

The river has never returned to its state that it was before the typhoon. The tourism industry therefore has not returned to Xinmei as it was before the typhoon. In Xinmei, two houses got destroyed but nobody got hurt. The government named the area around the two destroyed houses ‘danger area’, which meant that anyone living there would not be able to apply for funding from the government, which made them socially vulnerable. The people living in this danger area could go to a community especially built for families that needed to be relocated after the typhoon. Some families living in this danger area did not move at first. But after having had heavy rain which resulted in leakage and small floods in the houses, all families moved within 2 years after typhoon Morakot.

Shanmei got government support through funding relatively easy because of their important role in the national tourism industry, Chashan was overflooded with funding after the typhoon, but Xinmei does seem to struggle with getting access to this funding and therefore is considered not only physically vulnerable but also socially vulnerable. In the next section, this will be analysed more closely.

In Xinmei, half of the respondents disagreed with the statement 'the rebuilding of the community after typhoon Morakot was done in an acceptable amount of time', see figure 25. This is also due to the difficulties surrounding getting funding in a proper amount of time.

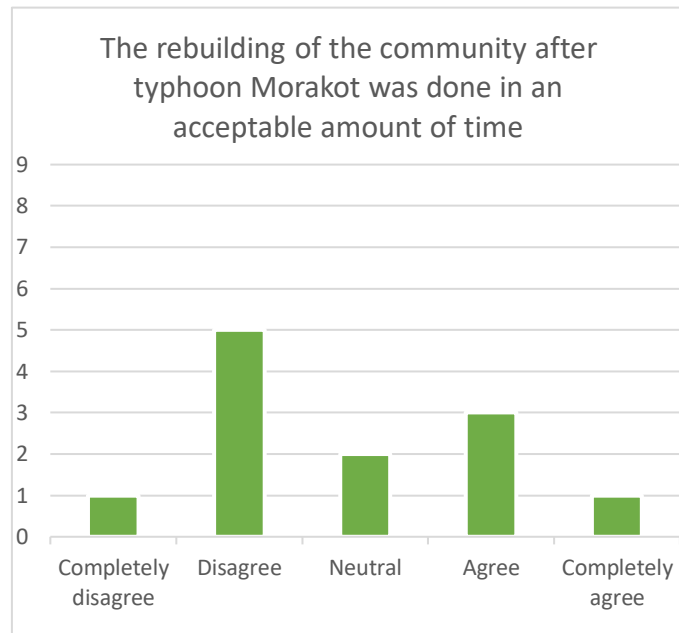


Figure 25: Bar graph of statement #8 answered by 12 out of 12 Xinmei households, source: Author's research.

5.2.4. Role of the development associations during and after typhoon Morakot

All villages have a development association. Their role during and after the typhoon will be discussed in the following section.

As mentioned, the development association of Shanmei played an important role in the rebuilding of the ecological park after typhoon Morakot. Although the way of rebuilding the park is different than the other villages did, the role of the development associations are all the same. During and short after the typhoon, the development associations were busy trying to open roads that were littered with debris from landslides. Sending information to the government about the devastations the typhoon caused was another important task of the development associations.

After the typhoon happened, the development associations were busy trying to rebuild the community. Through the access of funding, the communities were able to rebuild most of their infrastructure and other services that got destroyed. It seems that Shanmei and Chashan got the funding they asked for very easily. But the development association of Xinmei is still trying to get money for the road construction of the roads that got destroyed that lead to people their farm land. The development association gets the money from the government in parts and not all at ones, which slows down the process of rebuilding the roads tremendously. As stated before, it seems that the level of involvement in the tourism industry plays an important role in the access to funding and therefore capital, technology and market. This is not only a trend on the community level, but is also seen on the household level.

Access to knowledge or help from the development associations is crucial. In table 9 the data on knowledge about how to access funding is displayed per community. The households in Shanmei seem to have the most knowledge about how to apply for funding for both tourism development and typhoon/disaster funding. In Chashan there is a difference between applying for funding for the development of tourism and applying for recovering from a typhoon/disaster. This difference can be influenced by the concerns of the leader of the Leisure and Agriculture development association about the accessibility of government proposals. Since the leader of the Leisure and Agriculture development

association does not get approached for a project if the development association does not accept it from the government, this could be happening to more people from the community. In Xinmei there is an overall lack of knowledge about how to access both types of funding.

Table 9: Average of statements #3 & #4, source: Author's research. Use Likert scale: 1: Completely disagree. 2: Disagree. 3: Neutral. 4: Agree. 5: Completely agree.

	My household knows how to apply for funding for developing tourism	My household knows how to apply for funding to recover from a typhoon/disaster
Shanmei	3,9 ⁴	4,0 ⁵
Chashan	3,4 ⁶	4,1 ⁶
Xinmei	2,3 ⁷	3,0 ⁸

Out of the 20 surveys conducted in Shanmei, 18 households feel more capable to cope with the impacts of a typhoon because of the development association, or any other organization. In Xinmei this number is 9 out of the 12 which shows the impact of the development association on the coping of the community. Only 8 out of the 18 households that filled in the survey in Chashan agreed with the statement.

The surveys conducted in Shanmei show that the development association is very helpful towards its villagers. Namely 17 out of the 20 household surveys state that when the household is in need of help they can ask the development association for help. This ratio is lower in Xinmei, where 7 out of the 12 households feel they can approach the development association and will be helped. In Chashan the number of households which agree or completely agree with the statement is 7 out of 18, which is less than half of the respondents.

One of the things development associations can help with is accessing funds from the government. As shown in table 9, not everyone is aware of how to access funding, and households that have answered to have the knowledge to access funding, sometimes meant they have the knowledge to ask the development association to do this on their behalf. Therefore the statement #22 'The Development Association helps my household to get support from the government' was stated in the survey. 14 Of the 20 respondents in Shanmei completely agreed or agreed with the statement. In Xinmei, all the people that could step to the development association for help also agree that they can get support from the government through the development association. 8 Out of 18 households in Chashan completely agreed or agreed with the statement, one household is neutral and nine households disagree or completely disagree.

Only four households in Chashan stated that they have nothing to do with the tourism industry, interestingly of off these four households, three stated that they disagree with the statements; 'If my household has any problems we can ask the associations in our community to help us' and 'The community associations helps my household to get support from the government'. Which shows that tourism involvement is not only important to get support from the government on a community scale, but it is for households in a community where tourism is an important source of income for the

⁴ The average given is from 14 out of the 20 respondents in Shanmei

⁵ The average given is from 12 out of the 20 respondents in Shanmei

⁶ The average given is from 14 out of the 18 respondents in Chashan

⁷ The average given is from 10 out of the 12 respondents in Xinmei

⁸ The average given is from 11 out of the 12 respondents in Xinmei

community, important to be part of the tourism industry to get support from your local development association.

Also of off these four households that are not involved in the tourism industry, three stated that they would like to be part of the development association. Off these three households, one is even a member of the development association, but apparently does not feel part of it since it is not helped when asked and gets no support from the government through the development association. Concludingly, being part of the tourism industry as a community gives the community access to authority, the government, and being part of the tourism industry on a household level gives you access to the local authorities, such as the development associations in the villages.

5.2.5. Role of churches during the typhoon

The churches in especially Chashan and Xinmei did important work after the typhoon. Mental support was given to villagers since the typhoon left some people scared, these people did get therapy from the church. The church provided the communities with medical service and supplies through the use of a helicopter. Since the roads were not accessible the only way to reach the villages was by helicopter. The churches responded quicker after the typhoon than the government did and could be seen as the first responders. When the government arrived, they took over from the churches.

5.3. Disaster risk management of Taiwan

This section will cover a short history of the disaster risk management of Taiwan which is needed to understand the present disaster risk management system which will function as an introduction to the section about the relocation of households after disasters such as typhoon Morakot. During the research a relocated community was visited which will be analysed after the brief history of disaster risk management in Taiwan.

From 1945 to 1965 there was no official disaster management, which meant that the police would be held responsible for the emergency management (Tso & McEntire, 2010). This was developed out of the martial law created by the Chinese Civil War after the end of World War II. Therefore, when a disaster would happen, police and the army would act as the responders and be responsible for the stability of the society during and after disasters (Tso & McEntire, 2010). After the devastating earthquake Piahao in 1964 the government of Taiwan was forced to create a more effective disaster response and recovery mechanism. Hence, the Standard Procedure for Natural Disaster Assistance (SPNDA) was created in 1965. The main approach of the SPNDA management system was to focus on search and rescue, social assistance and the government started to be more interested in disaster preparedness. Nevertheless, the police and military were still the primary responders during disasters.

This approach changed in 1994 when two disasters occurred, one in America, the Northridge Earthquake and the China Airline crash that happened in Osaka, Japan. The highest executive agency in Taiwan, the Executive Yuan, created the National Hazard and Mitigation Program (NHMP). When creating this management program, the Taiwanese government looked at the American and Japanese response to both disasters. The biggest change in the management approach was that the fire-fighting system became independent and was not a part of the National Police Administration from 1995. The fire department was renamed and put under supervision of the Ministry of Interior. Henceforth, the new organization was responsible for the prevention of fire, disaster rescue and emergency medical service. Due to a limited amount of resources, the fire department still needs to rely on police and military when a big disaster occurs.

After the devastating 9/21 Chi-Chi earthquake that happened in 1999 and killed 2,415 people and injured 11,305 and is seen as one of the biggest and most devastating earthquakes in recorded history



of Taiwan, the public opted for the enhancement of the emergency management system. Their voices were heard and the Disaster Prevention and Response Act (DPRA) was passed by the government, and thereby was the first disaster management foundation in Taiwanese law. The main concept of this act is to involve every layer of the government. Therefore, every level of the government is forced to establish a Disaster Prevention and Response Council which then is responsible for implementing disaster management policies and plans. Together with armed forces, military corps, NGOs and community organizations an emergency management network is set up. It can be said that since 2000 a more local approach is set up. This local approach has a weak spot since the local institutions and organizations are reliant on the resources of the central government.

After yet another impactful disaster, typhoon Morakot in 2009, the emergency approach changed. Again, the public expressed their concerns about the disaster management of the country and wanted to see a more professionalized emergency system. The Office of Disaster Management (ODM) was created in 2010 with full time employees to oversee the policy implementation on disaster management. These full-time employees needed to professionalize the disaster management of Taiwan, but although it seems to be a full-time job many people working for the ODM have other local government jobs. Hence the disaster management of Taiwan is still an institution that does not get full attention and is a non-routine institution with large responsibilities.

While talking to the deputy minister of the Council of Indigenous Peoples (CIP) about the disaster risk management of Taiwan he mentioned another change in the approach of the central government. Since the Taiwanese president Ma Ying-jeou faced extreme criticism for the slow response of the government during and after typhoon Morakot, some changes were made. With regards to the indigenous communities which live in the disaster prone mountainous areas of Taiwan, changes were made. According to deputy minister of the CIP tibusungu é vayayana, the disaster management approach of the central government was not in line with the needs of the indigenous peoples. When the CIP got notice of the relief approach of the central government they offered the central government to act as a mediator and or translator between the central government and the indigenous tribes. This approach helped the government to understand the needs of the tribes and therefore helped the tribes to recover from the disasters they are facing yearly. Another addition to the disaster management of Taiwan was the deployment of a cloud-based infrastructure and implementing a decision support system for disaster response (NCDR, n.d.-a). Its primary task is to collect data on disaster prevention and response mechanisms and make it available for government officials to be better prepared to manage disasters. Technology for disaster warnings is something the Taiwanese government is investing in, which resulted in the Disaster Warning Technology and Emergency Response Support (NCDR, n.d.-b). Deputy minister of the CIP tibusungu é vayayana showed me during our conversation a Line⁹ group that had as main goal the sharing of information about approaching weather that could be of any danger to Taiwan and the effects such an event had when it occurred. Through this Line group, information was shared very quickly and people could relocate to safer places before the disaster happened. Also when roads were blocked or destroyed, services to fix this could be sent more quickly.

Academic literature and interviews with high ranked government officials show that disaster management in Taiwan was originally focussed on disaster recovery, whereas nowadays the Taiwanese government also focusses on the coping mechanisms. While this is echoed in academic literature and policy documents, I found that most people did not have any coping mechanisms on a community scale. Other than a container filled with food and medicine for the community in the event

⁹ An application on the mobile phone as similar to WhatsApp

of road systems being left unusable and an excavator to remove small rocks from community roads, the people in the community did not have mechanisms to cope with a typhoon. When I asked people why this was, the general response was that the awesome power of a typhoon makes impactful mitigation difficult.

A preventive measurement observed during the research is the clean-up from a river where, as seen in figure 26, were a lot of rocks that obstructed the water from a free flow, to a more evenly levelled riverbed in figure 27.



Figure 26: Before river clean-up, source: Author's research.



Figure 27: After river clean-up, source: Author's research.

5.3.1. Relocated households

Another coping mechanism of the Taiwanese government is replacing houses that got destroyed by the typhoon by houses in another area. The government asks these people, whose houses got destroyed by the typhoon, to relocate to another area. The government builds these houses with the help of NGOs such as the Red Cross or World Vision. The government has to adhere to some steps when relocating a household. Firstly, the government needs to look for a suitable area where they can rebuilt houses. These houses need to be built as close as possible to the area where the destroyed houses were. When this is not possible in the same village, the government needs to look at possibilities in the same township, if this is also not possible, the same county.

After typhoon Morakot in 2009 many households from the three villages and their neighbouring villages were relocated to the Chulu community, see figure 28.

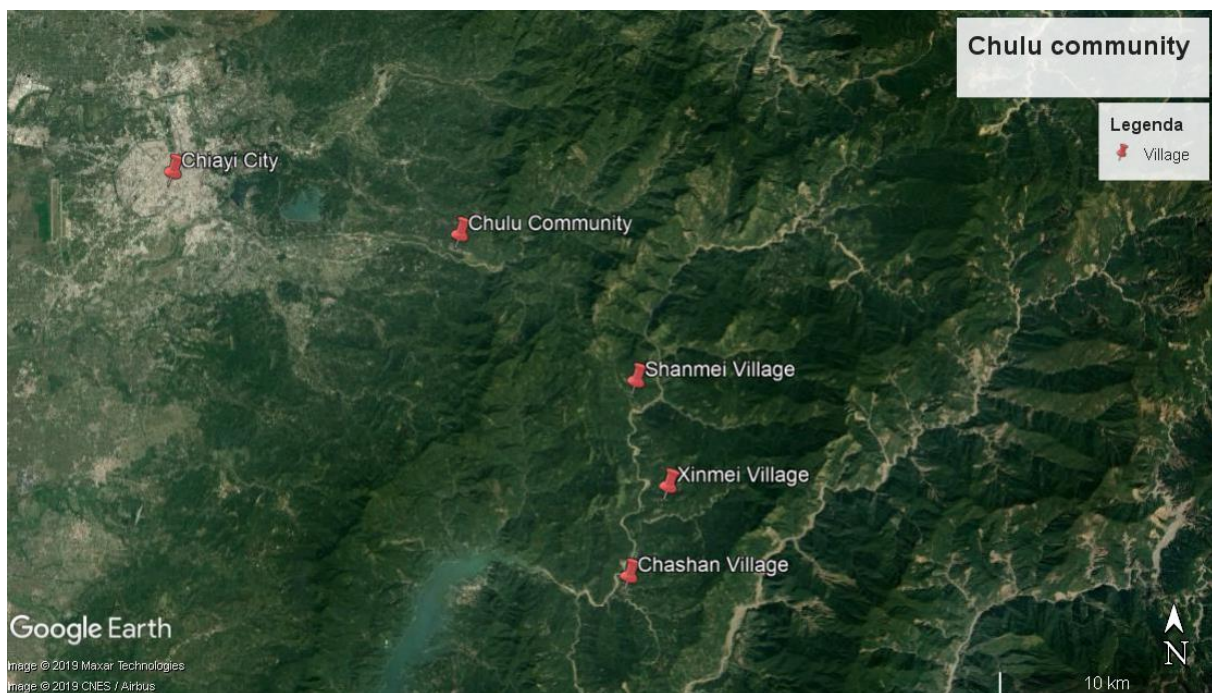


Figure 28: Location of Chulu community with respect to Chiayi city and the three research locations, source: Google Earth edited by Author.

The Chulu community was constructed for 156 families from 8 different villages. The Chulu community is located near Chiayi city and is in a flat area without mountains. The houses that are built for the Chulu community look uniform and are semidetached, see figure 29. The people that were relocated to the Chulu community still farm in the mountains. Some of them even have small houses so they can sleep close to their farm. People still practice farming in the mountain since they have no farming ground near the Chulu community. The people from the Chulu community therefore need to earn their living differently than before. Some people now start small tourism businesses while they are located



Figure 29: Houses in the Chulu community, source: Author's research.

next to the National Alishan Scenic Area centre. Tour busses on their way to Alishan or perhaps even to one of the researched villages stop by this centre and some of the tourists enter the Chulu community. The Chulu community has the possibility to have a market in the weekends for the tourists. Figure 30 shows the closed market during the week.



Figure 30: Chulu pop-up market, source: Author's research.

The community has been constructing a building to have the market in, but this is not finished yet. The community desires to move the pop-up market inside the building to have a better tourist attraction. Another tourist attraction the people from Chulu are working on is developing arts and crafts in people their own living room. In this way, people their own living room will become a small shop and atelier. Nowadays there are already 16 stores in the existing 156 houses. The people started to invest in tourism by themselves without help from the government, this changed because they got into contact with the government through their own development association. The leader of the development association wanted to start tourism because he used to work in an amusement park and he saw tourism as a good business opportunity. The development association writes their goals down every year and hands these goals in at the government in the form of a proposal to get funding for their projects. Their main goal nowadays is to remove the temporary pop-up market and finish the building of the bigger market. Also they want more people to open shops in their own houses.

The residents of the Chulu community received their new house after the destruction of their house in the mountains after typhoon Morakot. The head of the development association, who as well is the head of the tourism association, stated something noteworthy about the relocation procedure. This person explained that he had a house in Chashan that got destroyed and therefore was able to get a house in the newly built Chulu community. On the other hand, he also had a house in Chiayi where he

lived in for already a couple years before typhoon Morakot. He had a job in Chiayi and therefore did not live in Chashan anymore. So while he lived and worked in Chiayi, he was registered to be living in Chashan. Due to the fact that he was registered in Chashan and that house got destroyed he got a new home in Chulu. This did not only happen to this man, but to many more people. Some people accepted the house in Chulu, because it is a free house, but are not living in it because they have jobs and houses somewhere else in the country. This led to the fact that a third of the houses in Chulu are not inhabited.

Table 10 shows the results of the surveys about the relocation plans of the government and if their household would like to move. Since this survey is conducted 10 years after typhoon Morakot, most households that were asked by the government to relocate already did, hence the mostly disagreeing statements of the respondents. Interesting to observe is that Xinmei, with foremostly older people is disagreeing the most with the statement if their household wanted to live in a relocated community. Shanmei is more neutral, this is because a couple households stated that they would like to live in a relocated community. These households that stated this are young households, that do not mind living closer to the city.

Table 10: Average of statement #10 & #11 per village. Source: Author's research. Use Liker scale: 1: Completely disagree. 2: Disagree. 3: Neutral. 4: Agree. 5: Completely agree.

Village	The government wanted to relocate my household after typhoon Morakot	My household would like to live in a relocated community
Shanmei	2,8	2,7
Chashan	2,3	1,7
Xinmei	1,8	1,3

Since the community exists of people from 8 different communities, friction can be a problem in the community. This was mainly in the beginning for a little while, but not anymore. People from different communities live spatially mixed since the people got their houses by picking lottery tickets. This lottery system led to an equally divided and spatially mixed neighbourhood. Some people are sad because they had to leave the mountains, especially the elderly. The younger generation adapts quicker because they have been going to school in Chiayi and are more used to live in or closer to the city.

6. Discussion

This thesis' main question was 'What role does Community-Based Tourism play in the Disaster Risk Management of indigenous communities in Taiwan?'. To investigate this, research has been conducted in three separate villages of the same indigenous tribe with different levels of involvement in tourism. While all three villages were disrupted by the arrival of Typhoon Morakot and experienced similar physical impacts, the response to this disaster and the approach to rebuilding each village was different. This since the vulnerability context and the coping capacity of the three villages were different.

All three villages are similarly physically vulnerable, the difference however lays in the social vulnerability. The social vulnerability of the villages is heavily influenced by long-term trends in Taiwan concerning the focus on tourism development on the island. Since Taiwan has a focus on improving their tourism industry, villages who are involved in the tourism industry are less socially vulnerable, and therefore less vulnerable than villages which are involved with the tourism industry to a lesser extent. How social vulnerability is influenced by the access to resources a village or household has is explained in the following paragraph.

First of all, the two villages who were most involved in tourism before and after typhoon Morakot were better assisted by the government in terms of receiving funding. Shanmei was the first to receive assistance from the government due to their important role in tourism of the country. Thereafter Chashan was prioritised over Xinmei which is still awaiting their funding to rebuilt some roads. Secondly, the importance of tourism involvement is not only observed between villages. Within communities and individual households a difference is observed. This was especially visible in Chashan, which is not as tourism driven as Shanmei. The households which were not involved in tourism activities in Chashan did not feel that they could ask for help at the development association and therefore were not helped when they needed something from the government.

Whether engagement in tourism within the villages serves as a catalyst and cementer of connection to the government which in turn serves as a means of accessing funding to recover from typhoons remains the main question however. Alternatively, was there already a connection with the government which enabled the villages to build a tourism industry? Interestingly, both instances were observed during the course of research.

Shanmei developed their tourism industry without help from the outside, but with the pre-existing organization of the group who cleaned the river for the betterment of the livelihood of the indigenous fish species. Shanmei would grow to become the countries model example for community-based tourism. Because of the tourism industry, Shanmei got better access to resources via the government, who provided them with a new performance hall, as the result of the plan to revamp the existing tourist attractions. Because Danaiku ecological park grew to become a popular tourist attraction, Shanmei village became important to the government. Meaning, when Shanmei gets destroyed by a disaster, the rebuilding of the park is now a priority for the government.

Chashan developed their tourism industry with the help of the government. Miss Lee attended numerous conferences about beautification of areas which were provided by the government and had access to knowledge as such. Due to her involvement in the name rectification movement she knew government officials who helped her in the process of getting funding for her village. This access to knowledge, authority and therefore capital enabled the people of Chashan to develop their tourism industry.

The data thus suggest that in the case of Shanmei, the development of the tourism industry gave the community access to the government and therefore access to funding when the village and its tourism attractions were damaged by the typhoon.

For the case of Chashan, the access to the government was pre-existing, nevertheless the community has used the tourism industry to get access to funding, since the government is very much in favour of developing tourism. Therefore it can be stated that tourism does not only bring access to the communities who are actively involved in the tourism industry, but also those with ambitions or potential to do so in the future use the tourism industry as a tool to rebuilt the villages. Since funding for tourism is easily received from the government, communities use this funding to rebuild parts of their villages under the guise of implementing or improving tourism in the community.

In Xinmei, where there was little to no tourism activity, the government is slow to respond to the funding needs of the people. This can be seen as another example of the importance of tourism to the government. Because the tourism industry in Xinmei was not as established as that of Shanmei and Chashan, Xinmei was helped last. The lack of organizational structure of the development association and power in Xinmei might have influenced the lack of access to the government, as showed by the data representing the knowledge about how to access funding. The data therefore suggests that the lack of organizational structure to develop tourism, or access to the government to be able to develop tourism has impact on the disaster risk management of the community.

6.1. Theory versus findings

As the theory primarily states findings about either disaster risk management or community-based tourism, but not about the link between these two, the theory will both be compared to the empirical findings of this research.

Disaster risk management in Taiwan adheres to the observation made by Adger & Vincent (2005) that changes within disaster risk management are rarely made prior to and in anticipation of a disaster. Mostly, such changes are a response to a devastating disaster. Desk research on the history of disaster risk management in Taiwan clearly showed that after major disasters the DRM of Taiwan changed. This was researched on the national level with the use of policy documents, but on the community scale this was also observed to be the case. After typhoon Morakot, the villages got an excavator from the government to be able to remove debris from roads. A major improvement to the disaster risk management of the indigenous peoples is the improved role of the CIP during and after disasters. The CIP acts as translator and mediator between the government and the indigenous peoples, serving to translate the needs of the indigenous peoples to the government.

When conceptualizing community-based tourism, Salazar (2012) points out that tourism benefits are only reaped by a certain portion of the community and the negative effects are distributed amongst a larger segment of the wider community. Salazar (2012) illustrated this through a discussion of the effect that tourists had on the community in terms of littering or cultural commodification which changed the landscape for both the people who were active in tourism and the ones who were not, while only those involved in tourism reaped the benefits. This study goes beyond the observations made on the surface and sees the unequal distribution of access as a result of tourism among the villages and within the community. This unequal distribution is observable in this research through the level of access of the different communities and households. The access to resources is clustered in the villages with a high level of tourism activities. Within these villages the access to resources is concentrated in those households which participate in the tourism industry, as observed especially in Chashan. The households which do not participate in the tourism industry are left aside in terms of access to resources by the development associations who act as gatekeepers to access. Because of the

importance of tourism in the country and therefore the villages, the focus is primarily on tourism. Households that are not involved in tourism are left aside not able to reap the same benefits as the households that are involved in tourism, such as being able to access and use the resources of the local and / or national government.

Research suggests that theory related to these two concepts is represented in the research, but the main purpose of this research is to connect the two concepts rather than analyse them side by side. While connecting the two concepts, Taiwan's vulnerability context needs to be taken into account, as does the situation of the indigenous peoples of Taiwan.

Research showed that Shanmei was the first to receive assistance, before Chashan and Xinmei, after typhoon Morakot in 2009. Correspondingly, Shanmei is the village with the largest and most lucrative tourism industry when compared to Chashan and Xinmei. As mentioned before, Shanmei developed its own tourism industry without help from the government, and became a very successful tourism attraction and role model for the Alishan township. This successful tourism industry made them more important to the government than they might have been before. When hit by a disaster such as a typhoon, the village is therefore first in line to get help from the government. Concludingly, it can be stated that the success of the tourism attraction of Shanmei gave the village access to authority through which they can apply for funding when their tourism industry is destroyed. Therefore, the tourism industry has a positive effect on the disaster risk management of the village.

On the household level, the contribution of engagement with the tourism industry towards improved disaster risk management capacity is most visible in Chashan. Where the data shows that the households who are not somehow involved in the tourism industry of the community do not feel helped by the development association to access resources to bolster their coping capacity such as funding. The households who do participate in the tourism industry feel that they are helped by the development association to access the funding of the government. This shows that there is a correlation between the participation in the tourism industry and the disaster risk management of the household. With a very important role for the development association.

The development associations play the role of gatekeeper in the villages. The government has a direct link with these development associations and these associations will choose what projects will get developed in the villages. Therefore the data suggests that tourism gives access to capital from the earnings of the tourists, but more importantly tourism gives access to authority, since the government of Taiwan is focussed on improving their tourism industry. This access to authority gives access to capital because the government provides funding for tourism development. This access to authority also provides access to technology in the form of better roads that connect the villages to the tourists, therefore the villages have access to market through technology. The bigger the village's tourism industry is, the more important it is for the government to repair the roads after they have been littered with debris from disasters such as typhoon Morakot. Not only the data of the semi-structured interviews and the surveys support this claim, when interviewing deputy minister of the Council of Indigenous people, tibungu é vayayana, stated that Danaiku Ecological Park will be helped first because they are more important for the tourism in Taiwan, thereafter Chashan will be helped and lastly Xinmei will get the help because they are not as important to the tourism industry as the other two villages.

It should be noted that the government policies and therefore the situation of Taiwan has a considerable impact on the role that tourism plays on the disaster risk management of the indigenous peoples. Since the government of Taiwan is heavily focussed on the development of its tourism industry, when a disaster happens, this sector of the national economy is high on their priority list

when it comes to rebuilding. When taking in account the fluctuating nature of the tourism industry, as discussed in the recommendation section, it needs to be said that making the access to resources to cope with disasters depend on the involvement of tourism of the village is not sustainable.

This thesis contributes to the academic literature since it links the concepts of disaster risk management and community-based tourism, instead of analysing both concepts individually for the case of indigenous communities. This research therefore adds a new perspective to the disaster risk management of indigenous communities in the form of community-based tourism. This approach allows to obtain a more holistic overview of all factors that influence disaster risk management. This could fan new discussions in the scientific arena of disaster risk management and the impact of community-based tourism on indigenous communities, preferably discussed simultaneously.

6.2. Limitations of the data and future research

The data of the research was slightly limited since the research was conducted on three villages. When conducting research in three villages, time that could have been used gathering more in-depth information about community structures, which could have been interesting for the research, was not gathered. Contrarily, researching only two of the three villages could have limited the broadness and comparative nature of the study, which could have meant indecisive results, discussions and conclusions.

Thereafter, the limitations mentioned in the methodology, especially the limitations concerning the sampling methods which caused a non-uniform sampling method among the villages, are noteworthy and should be taken into account for future research.

The results of the researched showed that the households who were not involved in the tourism industry were lacking access to the development associations (authority) and therefore were lacking access to resources. Further research should look into this claim and further look into what kind of households were withhold access.

Noteworthy is the fact that the focus of Taiwan's government on tourism development plays an important role in all this. Therefore it would be interesting to see how the influence of community-based tourism and disaster risk management presents itself in disaster prone countries without a similar governmental focus on the development of tourism.

6.3. Recommendations

Tourism has brought the villages of Shanmei and Chashan many benefits as discussed above. Ultimately, the people living in the villages on the mountains are most prone to disasters in the country, which means they are very prone to disasters since Taiwan is the most disaster prone country in the world. A part of this research also focused on the relocated community of Chulu, and observed some of the problems they are coping with. One of the primary of these was the simple fact that tourists do not go to Chulu, leaving the people who were previously involved in the tourism industry empty handed. Therefore this research sees a possibly negative trend in the policy of Taiwan concerning the focus on tourism and the way they handle disaster risk management. Taiwan is promoting tourism in the most prone parts of the country by funding the villages to enable them to have a tourism industry. When hit by a disaster people are less likely to move to an area without tourism and as someone from Shanmei stated: *'People are staying in a disaster prone area because the tourism industry is here and not at the areas where it is maybe safer to live'* (Shanmei-1, semi-structured interview, May 27, 2019). Hence the tourism industry is a pull factor for people to stay in a disaster prone area. This research would recommend the government of Taiwan to look into the

indirect effect of promoting tourism in disaster prone areas. An idea could be to reserve a percentage of the tourism funding for the betterment of the disaster risk management in these areas.

Su-mei LO, an assistant professor at the department of anthropology at the National Taiwan University, stated that tourism is a very fluctuating business. A tourist attraction can quickly lose its draw for potential visitors, leaving those reliant on its success without visitors and flows of income. To be able to cope with a possible loss of tourist visits to villages, these villages need to diversify their economy. During the research, villagers were planting coffee and awaiting their first harvest, since coffee cannot be harvested in the first five years after planting. This is an encouraging trend in the villages on the mountains which will hopefully reap positive . Although organic agriculture is already promoted in Taiwan and in the villages which were the subject to this research, a greater focus on the coffee and other organic agriculture practices should be pursued . Not only will this diversify the economy, organic agriculture can also serve as a good management mechanism to reduce disaster risk.

Tourism is heavily promoted in Taiwan and used as a means to get funding for the villages in the mountains when they have access to the government. The question is what would happen when tourism loses its importance to the national government and the funding is cut back. There is potential here for the tourism industry to be deprioritised by the government, while the devastating impacts of typhoons continue to batter the country. It would therefore be prudent for Taiwan to consider relief funding for people in need.

The previous recommendation ties in with the last recommendation of the research. Land rights remain one of the biggest problems for the indigenous peoples in Taiwan. Besides the regulations the government put on the usage of land they have cultivated for centuries, without proper documentation the indigenous peoples cannot apply for funding in the wake of a disaster. This is likely why the villages use funding for tourism to rebuild their communities. Therefore, this research recommends an examination of the land rights of the indigenous peoples as this will enable them to apply for the proper relief funding, instead of making them apply for other funds such as tourism funds.



7. Conclusion

To answer the main question of this thesis, first the sub-questions must be answered and analysed. The conclusion of the thesis will be a summary of the most important findings of the research. Lastly, the main question will be answered to conclude the thesis.

The research showed that the three villages were different in terms of access, power structures and institutions. The three villages also differ in the level of involvement in the tourism industry, Shanmei being the most involved, thereafter Chashan followed by Xinmei which has a very limited involvement in the industry. The tourist attraction of Shanmei is the Danaiku Ecological Park where many tourists come every day of the week, year round. In Chashan, tourists visit on the weekends and stay the night in the homestays. Whereas in Xinmei, there used to be hiking trails, but nowadays Xinmei offers people the option to camp, which is mostly done in the weekends and is season dependent.

All three villages have a development association, which gives them access to the government. Nevertheless, some villages have more access than others. This access is influenced by the level of tourism activity of the community, because of the importance of tourism development to the government of Taiwan. Therefore, it can be said that tourism activity or the interests in it enables the development association to have access to the government and therefore access to resources.

The development associations in the villages are the main corridors of access to the government for the people living in the villages that were researched. Via the development associations, funding gets to the community. When looking into the access of households, the data of the surveys in Chashan showed that when households do not participate in tourism they do not feel supported by the development association when trying to get access to the government. This suggests that the development associations are mainly there to help the tourism industry to develop and neglect the other businesses in the community.

Tourism therefore has influence on the access on community level as well as on household level. The greater the involvement in tourism for a given community, the greater the access to resources from the government, owing to their focus on tourism and its considerable contribution to the national economy. On the level of households, it was observed that households which are not involved in tourism feel excluded from the access to resources of the development associations, through which the access to resources is obtained.

All three villages are physically vulnerable because they are located on a mountain in Taiwan. When looking at the data from the research, it shows that the villages are hit similarly and in the same categories, according to people their perception. The categories that were hit most severely are agricultural losses and the loss of income. Agricultural products are lost because the heavy rain and landslides caused the destruction of the crops. Loss of income was due to the fact that people were not able to do their job because the road was broken and bridges got destroyed, disabling people to reach their occupation. The social vulnerability of the villages was different because the access to resources was different among the villages. This access being influenced by the level of tourism involvement of the village and the households thereof. The vulnerability of the villages and its communities is connected to the trend of the political climate in Taiwan. Because the government has a strong focus on tourism development, the villages who are involved in this are prioritized to receive governmental help, especially when its tourism industry is damaged by a disaster.

All three communities have a container filled with food and medicine which they can use when the roads are destroyed and they find themselves cut off from supplies from outside of the community. After typhoon Morakot in 2009, the communities each got an excavator to be able to remove debris

from the roads and make them accessible after a disaster occurred. The development associations all have the same purpose, which is to report damage caused by a disaster back to the government. In Chashan and Xinmei, the churches played the role of a disaster relief organization, by deploying helicopters to supply the villages with resources. They would pick up some people from the villages and bring them to Chiayi to buy supplies, thereafter they would bring them back. After the relief work was done, the churches helped people get over the mental part of witnessing a disaster like typhoon Morakot.

To rebuild the community, the development associations used their access to authority to access capital in the form of funding from the government. Interestingly, the data of the surveys showed that especially the households in Xinmei did not have the knowledge on how to access funding for either tourism or disaster relief. This can be due to the lack of organizational structure of the development association which results in uninformed families about how to access the government through the development association. This can also be due to the lack of interest of the government in villages that are less involved in tourism and therefore are not helped equally as villages that are involved in tourism. So the households of Xinmei could have known how to apply for funding, but are not heard by the government and therefore feel they do not have the knowledge.

The largest difference in how communities cope with disasters when comparing communities involved in tourism and very little to not involved in tourism is the access to funding. Therefore the thesis suggests that the involvement in the tourism industry does give access to authority and therefore funding to recover from a disaster, because of the interest in tourism development from the Taiwanese government. Concludingly, the role that community-based tourism plays in the disaster risk management of indigenous communities in Taiwan is the role of giving access to funding to enable the indigenous peoples to recover from a typhoon.



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9. Appendix

Here additional data such as interview guides and surveys will be presented.

9.1. A: Semi-structured interview guides

Two semi-structured interview guides were developed. One to interview the community gatekeepers and one to interview the households in the community.

Before the interview would be conducted, the purpose of the interview and the study would be explained. For both the community gatekeepers interview and the household interview this would have been presented as the following.

“Hello, we are students from the NTNU who are interested in the tourism industry and the possible connection it could have to the disaster management of the community. We would like to ask you some questions if that is possible? It will take around 30min if that is okay? If during the interview you have any questions please do ask us.

The purpose of the study is to get a better understanding of the influence of tourism on the management of disasters in the community. The data gathered by these interviews will be made anonymous and will not be shared to the public.”

9.1.1. Community gatekeeper

Could you tell us a little bit about this community?

- How would you describe the social economic status of this community?
 - o What types of jobs do people do here? Inside or outside of the community?
 - o Is there a primary school? High-school? University?
- When did the tourism industry start?
 - o How/why did it start
 - o How did it develop?
 - Was every one of the community involved in the development of the tourism industry?
 - Or was the tourism set up by a specific group of people?
- What type of organizations are present in the community?
 - o Religion? Traditional groups? Women groups? Others?
 - o What do they do? Are they in any way connected to organizations outside of the community?
- Which of these organizations have been developed since the tourism industry?
 - o Which are these? What do they do within and outside of the community?
 - o Do they support each other?
- What was the impact of the typhoon on the community?
 - o What happened exactly before the typhoon in the community?
 - Was there an early warning? What did this look like? Could you have been relocated before the typhoon happened?
 - During the 5 days of rain, was there help from within the community? Was there a plan in place? Was this plan made by the community itself or by the government prior to the typhoon?
 - What happened within the community the days after the typhoon? Was there someone who took the lead in the days after the typhoon? Did the help from the government and NGOs come quickly? Did they come



- o themselves or was there someone in the community who contacted these organizations?
- o How did the typhoon impact the tourism industry?
 - Did the sector collapse and for how long, loss of income?
- How did the community recover after typhoon Morakot?
- In what way did the tourism industry help during recovery?
 - o Tourism gave access to capital, technology, knowledge, infrastructure?
 - Tourism industry kept going during typhoon Morakot?
 - o Tourism gave access to external help?
 - Government/NGO
 - o How do you think the community would have recovered without there being a tourism industry?
- Did anything change regarding the tourism activities after typhoon Morakot?
 - o Increase/decrease of visitors?
 - o Damage to infrastructure?
 - o Change in the tourism offer, e.g. hotels/homestays/restaurants/etc. changed?
 - o New people involved? Internal or external actors?
 - o What did this mean in the context of their overall livelihoods? E.g. agriculture could have been affected so that tourism would become more important
- How did the community change since tourism was introduced?
 - o How and why do you think?
 - o Do you find any positive or negative effects since having a tourism industry in the community?
- Does the tourism industry support any other industry within the community?
 - o Coffee plantation?
 - o Restaurants?
 - o Tours offered to the tourists?
- Did the people of the community who are not involved in the tourism industry got the same support after the typhoon as the people who work in the tourism industry?

Do you have any questions for us?

One last question, is there any documented information that you could give us about the tourism industry and or about the organisation(s) within the community?

9.1.2. Households

- What is your profession?
 - o Are you or someone within the household working in the tourism industry?
 - o Are you and the people within the household in any way connected to the tourism industry? Farmer who sells produce to food stands who sell to tourists?
 - If not in any way related to the tourism industry:
 - How do you earn an income as a household? Does this differ seasonally?
 - o Is this one job or do they have more little jobs?
 - o Are any of the jobs related to tourism?
- How much do you earn approximately? When having more than one job, what is the division of income?
- Tourism



- Do you know people that are involved in the tourism industry? Did you participate in the discussion to attract tourism to this area?
 - Do you feel left out of the tourism industry? How is your connection to the people who are in the tourism industry?
- How many people in your household are somehow connected to the tourism in this community? And how?
- How did the opportunity to work in the tourism industry come up? Why did you start working in the tourism industry?
 - Is there a person that introduced you to this industry?
- Since when have you been working in or with the tourism industry?
 - Before/after typhoon. Why?
- Can you tell us what happened during the typhoon?
 - Before: Was there an early warning? What did this look like? Could you have been relocated before the typhoon happened? Were you aware of any plans whenever a typhoon happens?
 - During the 5 days of rain, was there help from within the community? Was there a plan in place? Was this plan made by the community itself or by the government prior to the typhoon? How did the community get through the typhoon?
 - What happened to your house/belongings?
 - What happened within the community the days after the typhoon? Was there someone who took the lead in the days after the typhoon? Did the help from the government and NGOs come quickly? Did they come themselves or was there someone in the community who contacted these organizations?
- What was the effect of the typhoon on your work?
 - How long did you not receive any tourism customers?
 - How did you provide for your household?
- How did you recover from the typhoons destructions?
 - Where you in any way helped by anyone?
 - By someone from the community/community organisation/government/NGO? (*development association of the community got money they needed to distribute, did you get a fair share?*)
 - Did you apply for any funds from the government?
 - Did you get it, and how much?
 - How did you know that these funds were available?
 - In what way did the tourism industry play a role in the recovery of the community?
- Do you participate in any of the organisations of this community?
 - Any other group they participate in, could be as little as a book or card-playing group?
 - What is your role in this organisation?
 - Has this group/organisation changed after the typhoon?
 - Did the relations within the groups and the groups between them change in any way after the typhoon?
- What do you think of the way the community recovered after the typhoon?
 - Happy with the help from the community itself?
 - Happy with the help from the government?



9.2. B: Questionnaires

9.2.1. English

Questionnaire on Tourism and the Impact of Typhoon Morakot on the Community

Dear respondents, thank you for your time. We are a group of researchers and students from the Geography Department, National Taiwan Normal University who would like to ask you to fill in this questionnaire. The questions in this questionnaire will cover the topic of tourism and the effects of typhoon Morakot of 2009 on the community. All answers given will be taken care of with great respect and all answers will be confidential. If there are questions you do not understand, please do not hesitate to ask us to clarify these for you. If there are questions you rather not answer, you can leave them blank.

A1. What is your age? (years) ___ Or (Circle one): 1. 21-35 2. 36-50 3. 51-65 4. >66

A2. Sex? (Circle one): 1. Female 2. Male

A3. Marital Status? (Circle one): 1. Married 2. Single 3. Separated 4. Widowed

A4. Ethnicity? _____

A5. Highest education? (Circle one)

1. None 2. Primary 3. Secondary 4. High school 5. Higher education (college/vocational) 6. University

A6. Employment status? (Circle one)

1. Employed 2. Self-Employed 3. Part-time employed 4. Housewife/husband 5. Unemployed

A7. Household monthly income (in NTD) (Circle one)

1. <30.000 2. 30.000-50.000 3. 50.000-80.000 4. >80.000

A8. Where are you from? (Circle one),

1. This village 2. Other village but this township 3. Other township but this county
4. Other county, but Taiwan 5. Other country (state which country): _____

A9.1 If your answer is NOT '1', please specify what year you moved to this village and why

A9.1.1. Year: _____

A9.1.2. Why did you move here? (Multiple answers possible):

1. Personal reason (e.g. marriage) 2. Employment 3. Natural disaster impact
4. Government or resettlement policy 5. Tourism opportunities 6. Other: _____

A10. Household size? (including you) ___

A11. How many children does your household have? ___

A12. What is your function in the village?	(0 – No 1 – Yes)
1. Member of a development association.	
2. Member of other community association	
3. Member of the church	
4. Village head	
5. Community association head	
6. Priest / Church leader	
7. NGO employee	
8. Civil servant	

B1. What was the impact of typhoon Morakot of 2009 on	B1.1. (0 – No 1 – Yes)	B1.2 If <u>yes</u> , specify the severity of damage (Codes: 1. Very severe, 2. Severe, 3. Not severe)	B1.3. Losses in amount of NTD (if possible, if not write '0')
1. House structure			
2. Personal belongings			
3. Work equipment			
4. Agricultural losses			



5. Loss of income			
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C1. On-farm Activities

	C1.1. Activity? (0 – No 1 – Yes 2 -Used to do it, but stopped)	C1.2. <i>If yes, state type of participation in activity?</i> <u>Codes:</u> 1 - permanent 2 – seasonal	C1.3. <i>If yes, what is the percentage of your monthly income that comes from this labor?</i>	C1.4. <i>If yes, since when?</i> (year)	C1.5. <i>If no, why not? Or if you used to do it, why did you stop? (Multiple answers allowed)</i> <u>Codes:</u> 0. Personal choice / no time 1. Moved to tourism sector 2. Moved to other job 3. Typhoon/disaster related 4. Other: _____
1. Agriculture (rice)					
2. Agriculture (organic)					
3. Agriculture (non-organic)					
4. Livestock					

C2. How big is the role of agriculture in your community from a scale from 1 to 10, 10 being the most important role and 0 not a role at all (fill in scale 1-10)? ____

C3. Tourism and other activities

	C3.1. Activity? (0 – No 1 – Yes 2 -Used to do it, but stopped)	C3.2. <i>If yes, state type of participation in activity?</i> <u>Codes:</u> 1 - permanent, 2 – seasonal	C3.3. <i>If yes, what is the percentage of your monthly income that comes from this labor?</i>	C3.4. <i>If yes, since when</i> (year)	C3.5. <i>If no, why not? Or if you used to do it, why did you stop? (Multiple answers allowed)</i> <u>Codes:</u> 0. Personal choice 1. Lack of skills and knowledge 2. Lack of opportunities 3. Moved to farming sector 4. Moved to other job 5. Typhoon/disaster related 6. Other: _____
1. Homestay owner					
2. Homestay employee					
3. Restaurant owner					
4. Restaurant employee					
5. Guide					
6. Culture host (Dancer, story teller, etc.)					
7. Other:					



.....					
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C4. How big is the role of tourism in your community from a scale from 1 to 10, 10 being the most important role and 0 not a role at all (fill in scale 1-10)? ____

D. Did you apply for funding to deal with this damage? (if applicable)

D1. Funding applied for at	D1.1. How much in total (NTD)	D1.2. When did you apply? (Year)	D1.3. Percentage received? (fill in % - 100% = everything 0% = nothing)	D1.4. Applied via whom? Codes: 1 – Directly 2 – Development Association 3- NGO 4- Church 5- Village head 6 –Other, namely:.....	D1.5. Funding used for: Codes: 1 – Typhoon 2- Agriculture 3-Tourism 4 – Other, namely:... ..	D1.6. Funding was sufficient for its given purpose? (0 – No 1 – Yes)
1. Development Association						
2. Council of indigenous people						
3. Ministry of Agriculture						
4. Ministry of Labor						
5. Ministry of Culture						
6. Alishan National Scenic Area						
7. Other, namely: _____						

E1. Statements – Please answer the statements using completely disagree, disagree, neutral, agree, completely agree or don't know.	Codes: 1: Completely disagree 2: Disagree 3: Neutral 4: Agree 5: Completely agree 0: Do not know
1. The community benefits from the tourism industry	
2. My household benefits from the tourism industry	
3. I know how to apply for funding for developing tourism	
4. I know how to apply for funding to recover from a typhoon/disaster	
5. My household had plans to participate in the tourism industry before typhoon Morakot	
6. My household had plans to participate in the tourism industry because of typhoon Morakot	
7. After typhoon Morakot, tourism became more important in the community	



8. The rebuilding of the community after typhoon Morakot was done in an acceptable amount of time	
9. The people of the community have become closer after typhoon Morakot	
10. The government wanted to relocate my household after typhoon Morakot	
11. My household would like to live in a relocated community	
12. My household has learned from other households to develop tourism	
13. My household has learned from other households how to cope with a typhoon	
14. My household received information from the government how to deal with typhoons	
15. I helped my community members during typhoon Morakot	
16. I was helped by my community members during typhoon Morakot	
17. I helped community members after typhoon Morakot	
18. I was helped by my community members after typhoon Morakot	
19. We needed government funding to fully recover from typhoon Morakot	
20. My household feels more capable to cope with the impacts of a typhoon because of the development association (or any other community association).	
21. If my household has any problems we can ask the associations in our community to help us	
22. The community associations help my household to get support from the government	
23. I would like to be a part of the development association	
24. Tourism activities in my community and/or household are promoted online	
25. The youth is bringing in new ideas for the tourism industry in the community	
26. I have participated in government meetings on development/planning issues on my community	

F1. Do you have anything to add to this interview? (open answer)

Thank you for your cooperation!



9.2.2. Chinese

莫拉克颱風對在地社區影響與觀光業之間卷調查

親愛的受訪者您好：首先感謝您，撥冗填寫此份問卷。我們是國立台灣師範大學地理學系的老師與學生。這份問卷主要會是關於觀光業與莫拉克颱風對在地社區的影響。每一份問卷對我們都是莫大的幫助，而每一份問卷將會是匿名處理並僅作為研究使用，不會另做它途。如對問卷上的問題有任何疑惑，請務必尋求我們的協助，我們非常樂意解答您所有的問題。如問卷裡的問題因牽涉敏感問題而不想回答，予以留白即可。再次感謝您的參與。

- A1. 年齡？ ____（歲）或 (圈選一個): 1. 21-35 2. 36-50 3. 51-65 4. >66
- A2. 性別？ 1. 女性 2. 男性 3. ____（其他）（圈選一個）
- A3. 婚姻狀況？ 1. 已婚 2. 單身 3. 分居 4. 喪偶（圈選一個）
- A4. 種族認同（漢人、布農族、鄒族等等）？ _____
- A5. 最高學歷？
 - 1. 無 2. 小學 3. 國中 4. 高中、職、五專 5. 大專院校（圈選一個）
- A6. 就業狀況？
 - 1. 工作中 2. 自僱人士 3. 兼職工作 4. 家庭主夫/婦 5. 失業 (圈選一個)
- A7. 您來自哪裡? (請圈選),
 - 1. 本村 2. 阿里山鄉其他村落 3. 嘉義縣其他鄉鎮市
 - 4. 台灣其他縣市 5. 其他國家 (說明哪一個國家): _____
- A8.1. 假如您的答案非第一個, 請詳細的說明為何搬來這個村落
- A8.1.1. 何時搬來: _____
- A8.1.2. 為何搬來這裡? (可複選):
 - 1. 個人因素 (如：結婚) 2. 工作因素 3. 自然災害
 - 4. 政府安置措施 5. 發展觀光業的機會 6. 其他: _____
- A9. 家中有多少成員? (包括填答者) ____
- A10. 家庭裡有幾個孩子? ____

A11. 在村子裡扮演的角色?	(0 – 不是 1 – 是)
1. 社區發展協會成員	
2. 其他社區發展協會的成員	
3. 教會成員	
4. 村長	
5. 社區發展協會理事長	
6. 牧師	
7. 受雇於非政府組織	
8. 公務員	

B1. 莫拉克颱風（或其他颱風，請註明何時以及名字 _____）造成的影響	B1.1. (0 – 沒遭遇 1 – 有影響)	B1.2. 如果有影響, 說明嚴重程度 (代碼: 1. 非常嚴重, 2. 嚴重, 3. 不太嚴重)	B1.3. 災害中損失了多少金錢? (若無損失，填入‘0’)
1. 房屋結構			
2. 個人財產			
3. 工作設備			
4. 農業損失			
5. 收入損失			

C1. 農業活動

	C1.1. 從事的農業活動? (0 – 沒有 1 – 有 2 – 曾經從事, 但現在停止了)	C1.2. 如果「是」, 是季節性從事這份工作還是全年從事? 代碼: 1 – 全年 2 – 季節性	C1.3. 如果「是」, 每個月從這項農業活動獲取多少收入 (%) ?	C1.4. 如「是」, 從什麼時候開始此項農務活動? (西元幾年)	C1.5. 假如「沒有」, 原因為何? 或假設以前曾經從事過, 為何現在停止了? (可複選) 代碼: 5. 個人因素/ 沒有時間 6. 轉而從事旅遊業 7. 轉而從事其他職業 8. 因為災害/ 颱風的因素 9. 其他: _____
1. 農業 (稻米)					
2. 農業 (有機)					
3. 農業 (非有機)					
4. 牲畜					

C2. 你從事的農業活動在社區裡扮演多重要的角色? 10 表示最重要 1 不太重要(程度 1-10)? ____

C3. 觀光業與其它活動

	C3.1. 從事的農業活動? (0 – 沒有 1 – 有 2 – 曾經從事, 但現在停止了)	C3.2. 如果「是」, 是季節性從事這份工作還是全年從事? 代碼: 1 – 全年 2 – 季節性	C3.3. 如果回答「是」的話, 從這項活動中獲取的月收入佔了多少百分比?	C3.4. 如果回答「是」, 從何時開始 (西元幾年)	C3.5. 假如「沒有」, 原因為何? 或假設以前曾經從事過, 為何現在停止了? (可複選) 代碼: 0. 個人因素/ 沒有時間 1. 缺乏技能與知識 2. 缺乏機會 3. 從事農業活動 4. 轉而從事其他職業 5. 因為災害/ 颱風的因素 6. 其他: _____
1. 民宿主人					
2. 民宿僱員					
3. 餐廳老闆					
4. 餐飲人員					
5. 導遊					
6. 從事文化相關活動的人 (舞者, 說書人, 等等.)					
7. 其它					

C4. 你在這個社區扮演角色 (觀光業、從事文化相關活動) 的重要性? (請填入數字 1 到 10, 1 為最低, 10 為最高) ____

D. 您有因為莫拉克颱風造成的損害而申請補助嗎? (或是有因為其他颱風也對這個社區造成很大的影響)

D1. 從哪裡獲得補助	D1.1. 補助金額 (新台幣)	D1.2. 何時申請補助 (西元幾年)	D1.3. 從何處獲得多少百分比的補助 (100%=全部 0%=沒有)	D1.4. 透過誰申請? 代碼: 1-個人直接申請 2-社區發展協會 3-非政府組織 4-教會 5-村長 6-其它:.....	D1.5. 補助款用於何處 (可複選) 代碼: 1- 颱風造成的損失 2-農業損失 3-觀光業損失 4-其它:.....	D1.6. 補助款足不足夠? (0-不夠 1-夠)
1. 社區發展協會						
2. 原住民族委員會 (原民會)						
3. 行政院農業委員會 (農委會)						
4. 勞動部						
5. 文化部						
6. 阿里山國家風景區管理處 (阿管處)						
7. 其它: _____						

E1. 請使用完全不同意、不同意、沒意見、同意、完全同意或不知道來回答陳述	代碼: 1: 完全不同意 2: 不同意 3: 沒意見 4: 同意 5: 完全同意 0: 不知道
27. 這個社區受惠於觀光業	
28. 我家裡的人 (包含自己) 有受惠於觀光業	
29. 我知道如何申請補助去從事觀光業	
30. 我知道如何申請補助去彌補颱風以及其他災害造成我的損失	
31. 我家裡的人 (包含自己) 在莫拉克颱風之前有計畫要從事觀光業	
32. 因為莫拉克颱風的緣故, 我家裡的人 (包含自己) 之前有計畫從事觀光業	
33. 在莫拉克颱風之後, 觀光業在這個社群變得越來越重要	
34. 在莫拉克颱風之後, 社區在很快的時間內被重建並恢復	
35. 這個社區的人們因為莫拉克颱風變得更緊密	
36. 在莫拉克颱風之後, 政府勸我遷到永久屋	
37. 我家裡的人 (包含我) 想要住在永久屋	
38. 我家裡的人 (包含我) 有跟其他人學習如何發展觀光業	
39. 我家裡的人 (包含我) 有跟其他人學習如何因應颱風	
40. 政府有通知我家裡的人 (包含我) 如何因應颱風	
41. 在莫拉克颱風期間, 我幫助我社區的人們	
42. 在莫拉克颱風期間, 社區的人們有幫忙我	
43. 在莫拉克颱風過後, 我幫忙社區的人們	



44. 在莫拉克颱風過後，社區的人們有幫忙我	
45. 在莫拉克颱風過後，我們需要政府的補助去重建家園	
46. 因為社區發展協會（或其他社區發展協會）的關係，我家裡的人（包含我）更知道如何處理颱風帶來的影響	
47. 如果我家裡的人（包含我）有任何問題，我們可以向社區發展協會尋求協助	
48. 社區發展協會幫助我家裡的人（包含我）去向政府申請幫忙（例如：補助等等）	
49. 我想成為社區發展協會的一員	
50. 社區的觀光活動有在網路上宣傳	
51. 年輕人正為觀光業注入活水，提供新的可能	
52. 我有參與過政府舉辦的關於這個社區的發展與規劃的會議	

F1. 其他補充的話（開放性回答）

感謝您撥冗填這份問卷，非常感謝！