Adaptation to climate-related disasters

The response of the tourism sector to disasters in San Francisco and Malapascua Island, the Philippines

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Master thesis International Development Studies

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Preface

During my bachelor in International Tourism Management and Consultancy, my interest has grown to the use of tourism to stimulate economic development in developing countries. Besides my interest for tourism in developing countries, I am also concerned about the natural environment and climate (change) where tourism is located in. At many destinations, the natural environment and climate are part of the tourism product and therefore to maintain the tourism sector, I think it is necessary to protect these natural environments.

The relationships between the tourism sector, economic development, and climate (change) was one of my main goals to start my master International Development Studies at the University of Utrecht last year, September 2012. This master programme would increase my knowledge about development in developing countries, the barriers for development and the role of climate (change). Because of my interest in these relationships, the topic of this research has been chosen. Climate-related disasters are barriers for economic as well as tourism development and therefore should be taken into consideration for future development plans.

I hope this research will give a good introduction to the relationships and perhaps increase your awareness in the need for attention to the topic. I believe that more studies and actions should be done about the climate adaptation possibilities for the tourism sector in developing countries.

It is my pleasure to thank all the people for helping me to establish this research. First of all, I would like to thank both my supervisors, Dr. Guus van Westen and Fr. Louie A. Punlazan for guiding me through this process. Second, my gratitude is going to all the people that are willing to cooperate in this research. The private and public sector of the Philippines were very helpful and provided me with much useful information.

Without the support of all of them, this piece of work would not have been realized!

Climmy Roeffen

Utrecht, August 2013

Summary

The subject of this study has been derived from the upcoming concerns related to climate change. Climate change has been an important and interesting topic for both the private and the public sector. For now, the main focus has been on mitigation of emissions to reduce the human contribution to these changes. However, recently the emphasis on adaptation to climate change has been increased. It appeared that many developing countries are struggling with their current climate, let alone the changes. Climate, and climate change, is now seen as a barrier for development in many developing countries. There is often very little progress made, because the climate-related disasters are destroying the speed of progress. This brings us to the main goal of this research: to study how the tourism sector in the Philippines is prepared for climate-related disasters. The emphasis of this study is to answer the following research question: *'To what extent is the tourism sector prepared for safeguarding tourists and local communities from climate-related disasters?'* To answer this question, four sub-questions have been established. The four sub-questions that provide information to answer the main research question are:

1. What are the main characteristics of the tourism sector and what benefits do they bring to the local community? How do these characteristics stimulate economic development?
2. What are the main characteristics of the climate of the Philippines, and how are they changing? In what ways do these climate changes serve as barriers for economic development?
3. How does the government safeguard their people and visitors from the increasing climate-related disasters?
4. How do tourism-related businesses safeguard tourists and local communities from the increasing climate-related disasters?

In total, 17 semi-structured interviews have been conducted, of which 6 are in governmental institutions and the remaining 11 are in the private tourism sector (mainly accommodations and dive shops). These governmental institutions differ between regional – region VII, provincial – Province Cebu, or local level – Malapascua Island and Santiago. The private tourism sector is only approached for research in Malapascua Island and Santiago. Based on these interviews and related literature for this study the following conclusions can be made:

1. Tourism is seen as an important sector for economic and human development. Many developing countries like the Philippines focus on tourism development to reduce

poverty. In the Philippines, tourism development is mostly stimulated in the Visayas, which is an island group in the middle of the country. Currently, the tourism sector still has a small contribution to the country's economic development, but the impact is growing. In 2012, the tourism sector contributed 2% directly to GDP and is expected to increase to 2.5% in 2023. Indirectly, in 2012, the tourism sector is responsible for 7% of GDP and is predicted to reach 7.8% by 2023. In terms of employment, the sector is responsible for 762,000 jobs directly, which is 2% of total employment in the country. This is predicted to grow to 804,500 jobs (2.1% of total employment) by 2013. For the same year, 2,911,000 jobs were generated by the sector indirectly, which is 7.7% of total employment. For 2013, this is forecasted to provide 3,028,500 jobs (also 7.7% of total employment). Besides the affect that tourism has on the economic situation of the population, it also contributes to the improvement of their skills. Working in the sector may improve not only their language skills, but also skills needed for the job, like communication or hospitality skills.

2. The Philippines is the 10th most vulnerable country to climate change in the world. This is due to the fact that the country consists of more than 7,100 islands and therefore a large part of the population is living within coastal areas. These coastal areas are vulnerable spots to climate change, mainly due to rising sea levels and numerous active tropical cyclones, that create strong waves and floods in the country. Moreover, these tropical cyclones are characterized by heavy rainfall and strong winds, that also damage the country's landscape and infrastructure. The intensity of tropical cyclones is predicted to increase in the Philippines. This applies also for the frequency of them, however the frequency of cyclones is only projected to increase in the Visayas, while in Luzon and Mindanao the amount of tropical cyclones is slightly decreasing. These tropical cyclones are seen as a barrier for (economic) development. For the population, as well as the tourists, the cyclones can cause much damage and nuisance to their daily activities.
3. That the tropical cyclones are barriers for development is noticed only recently by the Filipino government. Before 2010, the government mainly focused on the recovery when a cyclone made landfall. After the introduction of the new law, the Philippine Disaster Risk Reduction and Management (DRRDM) Act, the emphasis was placed on reducing the vulnerability of the population, so that a next disaster would have less impact. These DRR programmes are still being implemented, but all officials interviewed for this research are optimistic about the results. By informing and

training the local population, less damage is brought to the people. This is now the main focus of the government, regarding adapting to tropical cyclones. Concluding from this research it can be said that there is no single approach for implementing this new law. One barangay is highly focused on implementing DRR programmes; the other barangay is not paying any attention to this. This contrast applies for the two research areas: in Camotes the government is well motivated to implement these programmes, whereas in Malapascua Island no plans have been realized. Based on the findings at Camotes, the Local Government Units (LGUs) are responsible for providing the population with information and training to raise the population's awareness regarding this topic. People are trained how to respond appropriately to different warning signal levels during a tropical cyclone. Additionally, they are informed about the location of evacuation centres. When a cyclone is approaching Camotes, the population is informed via radio, television or telephone. Depending on the warning signal, a DRR team will roam around the area to provide support where needed.

4. The actions taken by the tourism sector are very dependent on the actions taken by the government. Conclusion of this research: in Camotes where there is an active government in the field of disaster preparedness, the tourism sector has a reactive approach. In case of a disaster, the sector is fully dependent on the instruction of the government. No initiative is shown by the sector itself. This is in contrast with Malapascua Island where there is no active government. Here the tourism sector shows very little initiative in terms of disaster preparedness. The accommodations and dive shops of Malapascua island check the weather forecast regularly, if not daily. With this, they keep themselves updated about the development of the cyclones. However, the communication towards the tourists is still inadequate. The disaster preparedness of the tourism sector of Malapascua is mainly based on 'common sense'. Tourists are not informed properly, because 'they always travel with smartphone/laptop, and will check the weather themselves' and 'can make their own decisions what to do during a tropical cyclone'. With regards to communicating with the tourists, Malapascua has much room to improve.

It must be mentioned that no general statements can be made for the entire Philippines in terms of preparedness for natural disasters. This research has included two areas with different approaches of the government. Therefore, the actions taken by the tourism sector

varies as well. However, it can be said that with the switch from a reactive to a proactive approach, the mindset of officials and locals have been changed and until now, the new law has made a positive contribution in safeguarding the people.

Table of content

List of figures, maps and tables

Figures

Maps

Tables

Introduction

Like many other countries in the world, the Philippines is facing the consequences of climate change as well. Unfortunately these consequences express themselves in many different ways in this country. Air and sea temperature is rising, sea-level is rising, the dry months become drier, the wet months become wetter and climate-related disasters become even more frequent and the power they incur today is stronger. The impacts are noticeable in the entire country, in different sectors and for the population as well.

Fishery is one of these sectors. The Visayas, island group of the Philippines, capture a large variety of marine ecosystems. These ecosystems provide for a large amount of proteins for the region's fast growing population. Furthermore, it serves as an opportunity for full time employment in a direct and indirect manner. The people in the Visayas generate part of their income through fishery practices (Pollnac & Seara, 2011). Due to rising sea temperature the fish are not on the surface anymore and therefore the fishermen need to adapt their fishing gear. They used to use the traditional pole and line, however it is no longer going deep enough to catch the fish. They now use more harmful substance such as kerosene, fertilizer and dynamite which is unsustainable and bad for the health of the population (Green, et al., 2004; Pollnac, Crawford, & Gorospe, 2001).

A different sector that is vulnerable to the consequences of climate change is agriculture. It is very important to safeguard this sector as it covers 30 to 45% of total employment of the Visayas (Countrystat, 2012). Changing weather patterns, such as irregular rainfall, higher temperatures, and dryer periods in the wet season decreases the yields and agricultural output, as well as affecting the water supply. For example, the island of Bohol, one of the region's largest rice-growing areas, is struggling with the amounts of water needed for wet-rice production and unequal access to water (CCAFC , 2011).

Tourism is another sector that will be affected by climate change in the Visayas. It is yet a sector in development, however an important one is generating income for the local population and witnessing a steady annual growth. In 2006, the government established a new approach to develop the Visayas. The focus turned to the development of the tourism sector. This sector was, and is, seen as a driver of regional economic activity and diversification and therefore has become the priority in the central region of the Visayas. The ecological and cultural resources in this area, ranging from coral reefs to volcanoes, from agricultural villages to huge metropolis cities, and one of the greatest bio-diversities in the world (Ministry of Tourism Philippines, 2009), are the foundation for the development of a

sustainable sector (Government of the republic of the Philippines department of tourism, 2007).

The last decade shows a steady increase in tourist arrivals and income, and is expected to grow even further (World Travel and Tourism Counsil, 2012). To maintain this growth, the sector has to adapt to the consequences of climate change. However, tourism and climate change are interrelated, which means that on the one hand, tourism is highly dependent on the changes in bio-diversities caused by climate change. On the other hand, tourism is also a great contributor to climate change due to the large ecological footprint the sector has (Hall, 2010). For that reason the tourism sector must consider both mitigation and adaptation measurements to reduce their contribution and vulnerability to the climate change phenomenon. Mitigation measurements are mainly focusing on the reduction of greenhouse gas emissions. Adaptation measurements are different per country because each nation has to deal with other consequences and changes (Becken, 2012).

Climate change has many consequences for the tourism sector, because it is depending on many different aspects, such as the environment, marine life and climate. One of the consequences of climate change that can have social impacts are the related disasters, which are likely to increase. Climate-related disasters can have impacts on the population of the Philippines as it can destroy the entire living-environment, which will affect the economic development of the population. Tourism is a sector that contributes to economic development and therefore should be safeguarded as well. However, research upon the consequences of natural disasters on the tourism sector are still in its infancy, which leaves the sector still poorly prepared for these types of events (Ritchie, 2008; Becken, 2012). This leads us to the topic of the research you are reading now.

To maintain the benefits of tourism for economic development in a certain area, it is of high importance to protect this sector. However, the Philippines is dealing with many climate-related disasters every year, which holds back their own development as well as the development of the tourism sector. For that reason this study is focused on the adaptation measurements of the sector, but also takes the actions of the government into account.

This thesis is divided into two parts. The first part is including the theoretical (chapter 1), regional (chapter 2) and the methodological framework (chapter 3) to inform you with more background information about the topic of this research, in-depth information about the

Philippines, how this research is been carried out and moreover what the research questions and objectives are.

The second part contains chapters related to answer the research question. To research how the Philippines and its tourism sector are dealing with the climate-related disasters, it is necessary to, first, study the tourism sector of the Philippines. This will be done in chapter 4. And second, the climate of the country must be analyzed. This includes current characteristics of the climate as well as the changes that occur and the consequences of these changes and their related disasters. The (changing) climate of the Philippines is subject of chapter 5. Then, chapter 6 continues with the responses and actions of the Filipino government in dealing with these climate-related disasters. The government is responsible for safeguarding their population as well as their visitors. However, the tourism sector itself could also take action related to this topic. This will be discussed in chapter 7. This report will end with a conclusion that includes the answer to the main research question, and recommendations for future plans and further research.

Part one

1. Theoretical framework

Before we go more in-depth in the research itself, it is of high importance to introduce the theme and give an overview of the most relative theories and concepts. It is of importance to see whether practice is confirming the statements, or perhaps practice is showing other characteristics than discussed in theory. This theoretical framework is connected with the research findings later in this study.

This chapter will be divided into two subchapters, as it contains two different fields of study. First the climate system, and how to deal with climate (change) will be introduced, thereafter the tourism sector and their adaptation strategies will be discussed.

1.1 The climate system

The emphasis of this research is on the consequences of climate change, and therefore it is of high importance to explain the climate system as it is the main threat for the tourism sector in this research. To better understand the threat to civilization and all its activities, first the global climate system must be emphasized. Afterwards, the regional climate system of Asia and briefly the Philippines will be discussed.

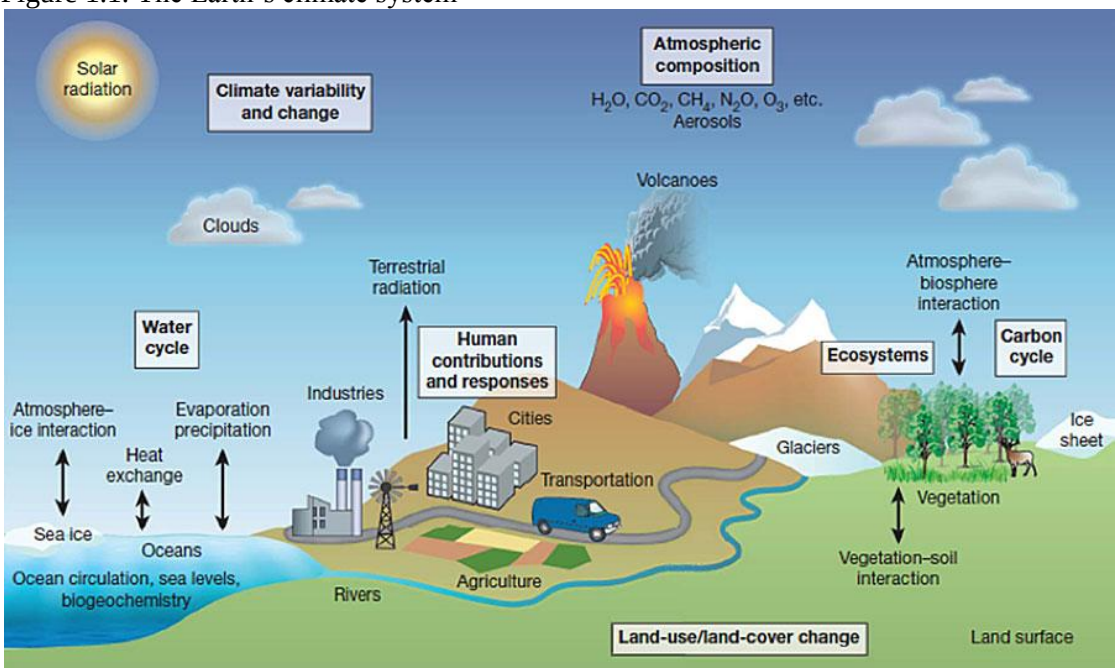
'The impact of climate change: the world's greatest challenge in the twenty-first century'. UNDP (2008), Fry (2009), Iqbal (2011) and likely many others agree on this statement. But why is climate change the biggest challenge for the 21st century? For millennia, the climate has been changing little by little, which is part of the natural process. However, about 200 years ago, due to the fast growth of human population, the large use of fossil fuels as an energy source, and industrialization, things began to change more quickly than before (Hardy, 2003). The topic of climate change began to receive attention and by the early 1960s many scientists believed that there was a great possibility that humans are contributing to global warming. The collection of evidence continued and by 2005, numerous scientists agreed that when global temperature increase exceeds about 2˚C, large-scale disruption could occur around 2050 (Harding, 2007). The relationship between greenhouse effect, global warming and climate change will be explained later on in this chapter.

Nowadays, climate change and sustainability are a hot topic of discussion. More research has been done, and action is been taken to reduce the human impacts, or to be better prepared for the changes. Yet, before we can examine the response of humans to this phenomenon, we have to go back to the beginning and therefore it is necessary to first discuss the global climate system.

To fully understand how the earth's climate, and the local climate of the Philippines, is changing, it is important to start with a global perspective. Therefore a definition of climate is needed. According to the IPCC (2001) climate can be defined as: '*Climate in a narrow sense is usually defined as the "average weather", or more rigorously, as the statistical description in terms of the mean and variability of relevant quantities over a period of time ranging from months to thousands or millions of years. The classical period is 30 years, as defined by the World Meteorological Organization (WMO). These quantities are most often surface variables such as temperature, precipitation, and wind. Climate in a wider sense is the state, including a statistical description, of the climate system'.*

In the same report of the IPCC (2001) a definition of climate system is given as well: '*The climate system is the highly complex system consisting of five major components: the atmosphere, the hydrosphere, the cryosphere, the land surface and the biosphere, and the interactions between them. The climate system evolves in time under the influence of its own internal dynamics and because of external forcing such as volcanic eruptions, solar variations and human-induced forcing such as the changing composition of the atmosphere and land-use change'.* To summarize and clarify: the climate system is the interaction between; the atmosphere, the gas surrounding the earth; the hydrosphere, liquid surface and subterranean waters, such as oceans, rivers, seas, underground water, etc.; the cryosphere, all snow, ice and permafrost on and beneath the surface of the ocean and earth; the land surface, the social and economic purposes for which land is managed; and finally the biosphere, all ecosystems and organisms in the atmosphere (figure 1).

Figure 1.1: The Earth's climate system



Source: Geographical Fluid Dynamics Laboratory, 2013

This interaction ensures constant changes in the climate. Since the last 65 million years and beyond, the global climate system is shifting from extreme cold to extreme warmth (Zachos, 2001). The climate is changed due to external causes such as direct solar radiation input; or by internal natural causes, like volcanic activity; or by internal human-induced causes, such as global warming (O'Hare, 2005). It is the modern climate change that calls for attention as this is dominated by human influences (see figure 1.1). According to Karl (2003) this modern change derives mainly from the increase of emissions associated with energy use, but land use changes and urbanization are also important. The emissions contain greenhouse gases which cause the increase of temperature. It is the combination of the level of temperature increase in the late 20th century and vulnerability of natural variability that causes a threat for the global climate (Crowley, 2000).

1.2 Climate change and development

So, now we know the cause of climate change, but what are the consequences of it related to development? This aspect of climate change has received much attention since the last couple of decades. People started realizing that the process of climate change has been sped up by human activities and the consequences are likely to have negative impacts in many different ways for all ecosystems as well as societies. The impacts expresses itself in various ways, such as the meltdown of glaciers, ice on rivers and lakes is breaking up earlier, biodiversity loss due to species extinction, trees are flowering sooner, loss of sea ice, sea levels are rising,

increasing frequency of natural disasters and temperature is more irregular with more intense heat waves (NASA, 2013). If all these changes occur, then ecosystems have to adapt their habitat. As it is extremely broad to discuss all impacts on all ecosystems and their changes and adaptations, this research is focusing on one consequence – increase of natural disasters – for societies. Climate change can have many different consequences for societies, ranging from affecting water resources (Vörösmarty, 2000), food resources (Parry, 2004), health care (Blashki, 2007) and economic development (Frankhauser, 2005). To illustrate, human health will suffer in numerous ways due to climate change by increase of diseases, decrease of food productivity, increase of air pollution, weather disasters, and sea-level rise (Hardy, 2003).

The impact on human health can even lead to mortality. Climate-related disasters, like storms, floods and droughts, are likely to increase by frequency and power due to climate change and cause many deaths. Yet, compared to the past, the death toll by climate-related disasters has decreased enormously, which . The following table illustrates the global deaths and death rate for various types of events in two periods: 1900-1989 and 1990-2006.

Table 1.1: Global deaths and death rate for various types of events, 1900-1989 and 1990-2006

	Deaths per year		**Death rate per year (per million people)**	
	1900-1989	1990-2006	1900-1989	1990-2006
Droughts	130,042	185	57.99	0.03
Floods	75,212	7,637	31.95	1.29
Windstorms	10,856	13,650	2.96	2.45
Waves/surges	128	207	0.06	0.03
Extreme temperatures	110	5,671	0.03	0.91
Wild fires	21	47	0.01	0.01
Total	216,839	28,266	94.16	4.87

Source: Goklany, 2007

The absolute deaths per year has decreased by 87% and the death rate has even decreased by 95% comparing the two periods. However, a change in the most deadly event has occurred. Between 1900-1989 droughts was responsible for the highest death toll in relative and absolute numbers. This has shifted to windstorms in 1990-2006. Although the deaths caused by floods has decreased, it is relatively still high compared to droughts. Thus, nowadays, windstorms and floods are responsible for the most mortalities. The Centre for Research on the Epidemiology of Disasters (CRED) mentioned in Skoufias (2003) states a clear increase in the number of natural disasters reported, probably due to changes in the global climate. So

this cannot be the explanation for the force decrease in mortalities. Possible arguments for this enormous decrease in mortality can be explained by that humanity has been extremely lucky in terms of the moment and place of the events, or, more likely, that the world population has increased their ability and adaptive capacity to cope with these extreme events (Goklany, 2007).

The consequences go beyond human health only. These climate-related disasters also have enormous impacts on the economic development in countries and its people. The more developed a nation is, the fewer the disaster-related economic losses there are. The more developed countries are often characterized by higher levels of education, more open economies, more complete financial systems, smaller governments (Toya, 2007), and since the 1950s a strong increase in economic costs for preparedness to climate-related disasters. However, often natural disasters work against the achievement of economic development, especially in developing countries. Regular exposure to hazards result in a reduction of investment and savings, because by every event the financial capital of people are affected. This will in turn depress future production and future consumption per capita (Frankhauser, 2005). When economic development, or per capita income, rises, the degree of safety rises as well. It will not only generate general safety, but, when income reaches a certain level, societies are more able to deal with extreme disasters (Padli, 2010). This means that economic development has to be safeguarded to reach a certain level of safety, which in turn will protect the society for future natural disasters.

1.2.1 Responding to climate-related changes and disasters

The cause and consequences are briefly discussed above, which brings us to the core of this research: how do humans respond to the changing climate and its consequences? In academic literature, a distinction is made between two strategies to deal with this: mitigation and adaptation. The Intergovernmental Panel on Climate Change (IPCC) is an institute that is dedicated to researching the issues around climate change. Working group 3 assessed all relevant options for mitigating climate change, with the main focus on limiting or preventing greenhouse gas emissions and improving activities that remove these gases from the atmosphere (Rogner 2007). Working group 2 had their focus on climate change adaptation, assessing the scientific, technical, environmental, economic and social aspects of the vulnerability to climate change and to what extent adaptation can reduce this vulnerability (Cruz, 2007). Adaptation can be defined as: '*the activities or actions that people undertake,*

individually or collectively, to accommodate, cope with, or benefit from, the effects of climate change, including changes in climate variability and extremes' (Becken, 2007).

Thus, there are two ways for humans to deal with climate change. The industrialized nations are still responsible for the majority of the greenhouse gas emissions, although some developing countries are now increasing their emissions as well. Often development and increase of greenhouse gas emissions are related. However, the developing countries often do not have the financial and human capital to respond properly (Casis, 2008) and besides are the ones hit most often by natural disasters (Shah, 2012). Therefore the focus in developed nations should be more on the mitigation aspects, and the developing nations should emphasize more the adaptation measurements.

Let us focus again on the climate-related disasters that are likely to increase due to climate change. Adaptation to these disasters is not a new phenomenon. Human societies have always and everywhere had to develop coping strategies in facing unwanted climate or weather changes. This applies to developing as well as developed countries. According to Kahn (2005), richer countries do not experience fewer natural disasters than poorer countries, however the richer countries do suffer less death from disasters. It is the availability of resources that makes a distinction in the vulnerability of countries. The vulnerability of a region to climate-related disasters and change is determined by social, economic, political and physical factors (Brooks, 2003) and by its ability and opportunity to adapt to change (Adger, 2003). Moreover, these disasters do not only effect peoples' lives, but also negatively affect the ability of societies to develop further (Helmer, 2006). Therefore, attention of policymakers is now turning to questions regarding how people and societies can adapt to the risks posed by climate change and prepare for these natural disasters and moreover, how to implement this in development (Adger, 2003).

1.2.2 Adaptation to climate-related disasters

One of the two strategies mentioned in previous paragraph is the focus of this research. The research is conducted in the Philippines, a developing country. Although they contribute to the worldwide emissions as well, adaptation has a higher priority for economic development and therefore this study focus on this strategy. This does not mean that there should be no attention to mitigation, both are important strategies to respond to climate-related disasters and changes. Before adaptation strategies are discussed, a definition of a disaster must be given, which is basically a result from the interaction between hazard and vulnerability. A

hazard stands for the likelihood of occurrence, and potential and intensity of events such as droughts, floods and storms. The social, economic, political and physical factors that decide the amount of damage a certain event will cause is concluded in the term vulnerability (Brooks, 2003).

Thus, to deal with the natural disasters, these two variables – hazard and vulnerability – can be addressed, at least in theory. However, changes in hazard profiles are difficult to predict which makes it complicated to address this variable. This means that if societies want to adapt to natural disasters, they must focus on the vulnerability variable. Therefore societies have to strengthening local capacity and increase their resilience to cope with natural disasters (Brooks, 2003). Strengthening local capacity, or local capacity-building, is an approach to increase resilience to natural hazards, avoid disasters and adapting to environmental and climate change (Allen, 2006). Since the late 1980s, capacity building is seen as one of the essential elements for sustainable and people centred development. Capacity building is an approach to development (Eade, 1997).

Talking about vulnerability and resilience, a variety of meanings and interpretations are used in both life and social sciences (Gallopín, 2006). In social science, generally speaking, vulnerability to natural disasters means the potential for loss. This vulnerability varies over time and space as geographical and social aspects differ over time. Cutter (2003) calls for three main aspects in vulnerability research: the conditions that make places or people vulnerable to natural disasters; the assumption that vulnerability is a social condition; and the potential exposures and social resilience with a specific focus on particular places. Resilience stands for the capacity of social systems to manage frequent disturbances of natural disasters. It reflects the level of self organization of a complex adaptive system, and the level to which the system can build capacity for learning and adaptation (Adger, 2005).

In other words: vulnerability displays the ‘weakness’, and resilience represents the ‘strength’ of a society. The more the resilience, the less the vulnerability and vice versa. Therefore, for a society to cope with natural disasters it has to strengthen their local capacity and increase their resilience. To increase their resilience, communities can implement programmes based on Community-Based Disaster Risk Reduction (CBDRR). Disaster risk reduction includes the support and promotion of sustainability in social and economic development by reducing factors that contribute to climate-related risks. By implementing a disaster risk reduction programme people will be better prepared for disasters (Field, 2012). Especially humanitarian agencies are in the frontline of implementing this strategy (Rottach, 2010). In history, communities, and its people, have been the first responders to disasters and took leading roles

in post-disaster recovery and because of that the role of communities in pre-disaster preparedness is of high importance as well (Shaw, 2012). CBDRR means combining different stakeholders at different levels and it focuses on the pre-disaster activities for risk reduction by communities. Then there is also Community-Based Disaster Risk Management (CBDRM) which has the emphasis on risk-reduction-related activities before, during and after the event, so it has a broader perspective than the CBDRR (Shaw, 2012). Although, this does not mean that disaster risk reduction cannot be implemented in different scales. Increasing resilience and adaptive capacity is an issue on local, up to global level (Adger, 2001).

On a global level, the government is more responsible for actions. A distinction can be made between autonomous and planned adaptation. The former is a more natural or spontaneous adjustment often done by individuals. The latter can be defined as adaptation with conscious intervention and is more frequently used by the governments. However, this can be blurred in practice. For example, a farmer switching his crops and management practices can be seen as planned adaptation on the farmer's level, however is autonomous from the perspective of his government. Other example of planned adaptation is, and can directly reduce the negative impacts of climate change, building of sea walls, which is mainly done by governments (Adger, 2003; Frankhauser, 1999). But there is more a government can do. A study done by Tompkins & Hurlston (2003) on the response on tropical cyclones of Cayman Island's government shows some interesting examples on what a government can do to protect its society (see Table 1.2). The study illustrates that governments could change laws and regulations so that institutions can only implement projects that are meeting the requirements of disaster control of the national government.

Table 1.2: Changes in Cayman Island's laws and regulations relating to tropical cyclone impact management

Law/regulation	Change	Motivating factor	Effect
Building code	Stricter requirement for new buildings	Internal review process and exposure	"The building code is now better. Our buildings are being designed to withstand hurricane winds of up to 130mph. Certain structures such as hospitals and shelters are being made to withstand winds of up to 150 mph." Respondent 2, 020705
Development and planning regulations	Increased waterfront set back in beach front areas	Exposure to tropical cyclones and beach erosion	"As a result of the current review we will see proposals that will require us

		and debate	to pay a bit more attention to hurricanes and indirectly to sea levels". Respondent 2 020705
Petroleum law	Mitigate environmental hazards	Exposure and review	"we will have an inspectorate like the Health and Safety Executive in the UK." Respondent 5, 020704
National conservation law	Longer term planning for environmental management	Persuasion	"The law establishes a mechanism for creating protected areas and deals with the Environmental Trust Fund issue." Respondent 14, 020629

Source: Tompkins & Hurlston (2003)

The above illustrates that adaptation requires the whole society to adapt to a certain change, or climate-related barrier for development. This can be done on different scales and governmental levels, but cooperation between the levels is highly required. Furthermore it is mainly the task of the government (all levels) to inform the population about the conditions and provide them with useful information. Therefore adaptation and disaster risk reduction is everybody's agenda. This means that for adaptation and disaster risk reduction everybody should be aware of the problem and the possible solutions for themselves to deal with the problems better. If knowledge is well implemented, it is easier to adapt and people will be less vulnerable for the climate-related disasters.

1.3 Tourism, development and climate change

The second field of this study is tourism and its relationship to development and climate change, which the rest of this chapter will be devoted to. The relationship between tourism, development and climate change is seen as a dilemma for many countries. Tourism is seen as a potential to contribute to economic development, while climate change is a key development issue (Palosuo, 2009).

According to the United Nations World Tourism Organization (UNWTO) tourism is defined as: '*a social, cultural and economic phenomenon which entails the movement of people to countries or places outside their usual environment for personal or business/professional purposes'.* With this said, tourism can have an impact on the local population, on the natural and built environment, on the economy, and on the tourists as well. Because this involves, or affects, numerous stakeholders, tourism development requires a holistic approach, which focus on implementing national and local tourism policies as well as taking the international

agreements into consideration (UNWTO, 2013b). Often the term tourism is used to address either the sector or the industry, however these are not the same. The tourism industry includes all businesses that are involved in providing tourism products or services. The tourism sector is a more wider perspective as it also includes the input of governments (national and local), the environment and local communities into tourism (Becken, 2007). In this study the emphasis is on the *tourism sector*, as it includes the role of local businesses, inputs of governments and effects on local communities.

1.3.1 Tourism and development

In many developing and least developed countries, tourism is the most realistic and sustainable option for economic development. In some countries it is even the main source of foreign exchange earnings. In 2011, 46% of the total international arrivals were hosted by developing countries. The contribution to a country's GDP can account for 25%, particularly in some small island states, which makes tourism a very important component in the economy of developing countries. When tourism is managed well, the benefits will trickle down to the local population by creating employment. So eventually tourism can contribute to diminish poverty and contribute in achieving the Millennium Development Goals (MDGs) (UNWTO, 2013a).

The main reason for governments of developing countries to emphasize tourism development is to stimulate economic growth, because it can generate income and provides foreign currency (Buijze, 2010). In 46 of the 49 least developed countries, tourism is seen as the most important source of foreign exchange earnings (Goodwin, 2005). To stimulate the influence of tourism in developing countries pro-poor tourism and community tourism are, among others, established. Pro-poor tourism is a form of tourism that generates net benefits for the poor. Not only economic benefits, this can also includes social, environmental or cultural. The difference between this form of tourism and others is that pro-poor tourism is looking for opportunities for the poor within tourism, rather than expanding the overall size of the sector and bringing more benefits to the people already involved. Pro-poor tourism consists of three core actions needed: (1) increasing access of the poor to economic benefits (by providing training the people are able to take up business and employment opportunities and income will be more spread beyond the individual earners); (2) addressing the negative social and environmental impacts often associated with tourism (such as lost access to land, coastal areas and other resources and social disruption or exploitation); and (3) policy/process reform (creating opportunities to increase their participation in decision-making processes and

stimulate partnerships between the poor people and the private sector in developing new tourism products). In these actions the private sector, community organizations in destination countries, international NGOs and governments should all be involved in efforts to develop Pro-poor tourism (Roe, 2001). Community tourism is slightly similar to the pro-poor tourism, however it has the focus on including the entire community instead of emphasizing the poor. Within community tourism the living environment of the community will be used, and therefore it is important that they are empowered to decide what and how tourism facilities are being developed, and how costs and benefits will be distributed (Scheyvens, 1999). However, this idealistic view of pro-poor and community tourism is questioned by several authors. They believe that the poor and the local communities in developing countries notice few benefits from the tourism sector, because they lack control over tourism development and financial resources to compete with the external investors. In many developing nations there is still a top-down view which conflicts with the idea of empowering local communities (Hampton, 2005; Harrison, 2008).

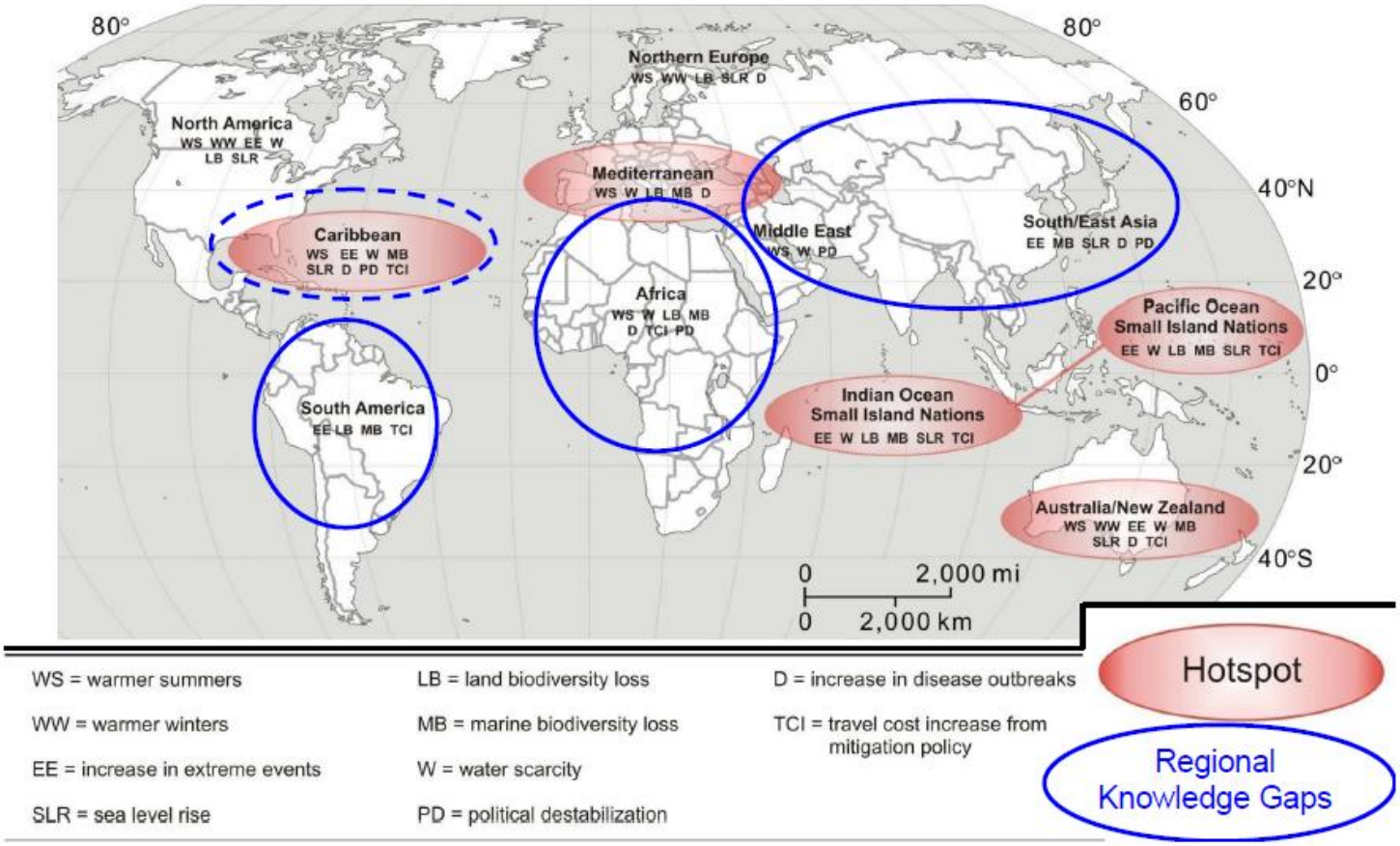
1.3.2 Tourism and climate change

Although there is an increasing awareness of the importance of climate change for tourism, yet detailed knowledge is still limited. What is known, is that tourism and climate change are interrelated. This means that on the one hand, tourism is highly sensitive to the changes in biodiversities and the increase of natural disasters caused by climate change. Tourism is considered to be a highly climate-sensitive economic sector. However, on the other hand, tourism is also a large contributor to climate change due to the large ecological footprint the sector has (Hall, 2010). The global tourism sector contributes about 5% (in 2005) to the worldwide CO_2 emissions. Compared to countries, tourism would be ranked 5th. Only the United States (22.2%), China (18.4%), the European Union (11.4%) and Russia (5.6%) are producing more CO_2 emissions. The disadvantage of the sector is the dependence on transportation which is a great contributor to emissions worldwide. Of the tourism product, about 75% of the emissions is produced by transportation (air transport 40%, car transport 32% and other transport 3%), accommodations accounts for 21% and the activities only for 4%. When no changes will be made and 'business as usual' will continue, this will increase to 68%, 25% and 7% respectively in 2035 (Scott, 2008). This means that when the tourism sector will implement mitigation measurements, they would mainly focus on the choice of their transportation mode to reduce their emissions (Dubois, 2006), which is often decided in the tourists' home country. In contrast, adaptation measurements should mainly be

implemented in the host country, as they are the most vulnerable to the consequences of climate-related changes and disasters (Becken, 2012). Thus, because tourism is influencing climate change and is affected by climate change, both mitigation and adaptation measurements should be considered. There are numerous scientists, among others Becken (2012), Helmer (2006), Thomalla (2006) thinking that there is a need for a new set of approaches regarding climate change adaptation in the tourism sector.

These consequences of climate-related changes and disasters can have direct and indirect impacts on tourism. Direct impacts could be warmer summers, or warmer winters, changes in rainfall and increased extreme events. The indirect changes that have impact are biodiversity loss, coral bleaching and sea level rising (Scott, 2008). All these consequences will affect the tourism sector by damaging infrastructure, higher operating expenses and business interruptions (Simpson, 2008). That these consequences of the changing climate globally is shown in figure 1.2. Here, the most vulnerable tourism hotspots, according to Scott, are illustrated and as you can see, the entire world is affected, though not all regions are dealing with the same consequences.

Figure 1.2: Tourism vulnerability hotspots



Source: Scott, 2008

However, other numerous international experts believe that developing nations in the Caribbean, small island developing states, Southeast Asia and Africa are considered the most at-risk tourism destinations for the mid- to late 21st century (Palosuo, 2009). So there is some agreement on which tourism areas will be most vulnerable, but not all experts agree on this.

1.3.3 Adaptation in the tourism sector

The consequences of the changing climate is influencing the tourist perception of a certain destination and therefore also the decision-making process for their holidays. For that reason tourism destinations should take a proactive approach in dealing with these changes and related disasters so that the tourists feel safe to visit a certain prone area. However, currently the knowledge of adaptation possibilities in the tourism sector is still underdeveloped. Yet, there is only a low level of concern and little evidence of long-term strategic planning when it comes to climate change (Palosuo, 2009). Although little information is available about adaptation possibilities in the tourism sector, it is important to highlight what is known. Because the information on the potential impacts of climate change on the tourism sector is still underdeveloped, the assessments that are available must be considered with caution (Becken, 2012).

Becken is one of the researchers that is active in the field of adaptation strategies in the tourism sector and has a share in the little information known about this topic. She makes a distinction between independent and formally planned adaption, which is similar to autonomous and planned adaptation discussed earlier in this chapter. Although independent adaptations will be adequate in many cases, formally planned adaptation is preferred in the tourism sector. This is to ensure that climate change and its consequences are integrated into development activities, which is often lacking when individuals implement adaptation. Throughout these development activities decision-makers have many opportunities to take action to improve the resilience of the tourism sector, or reduce its vulnerability. It is of great importance that key players in the tourism sector recognize that climate-related disasters and change can be major barriers for the sustainability of tourism – risks to individual enterprises and to people, communities and national economies dependent on tourism – and therefore disaster risk management and adaptation to change should be implemented. However, tourism is a complicated sector with many different components involved. So where, or how, should disaster risk management and adaptation be implemented? In Becken (2007) five principal

components of tourism are mentioned. Let us discuss the adaptation actions that can be taken by each component.

- Appeal of destination. This component entails the attractiveness of a certain destination. The flexibility to adaptation varies between the different subsectors of the tourism sector. The tourists are the most flexible. They have relative freedom of destination choice and timing of travel. The suppliers of tourism services have the least flexibility, but still action can be taken by creating new activities at the destination, or making the existing attractions 'climate proof' by establishing for example an indoor tropical holiday park or indoor snow slopes. Furthermore, the tour operators play a significant role in the travel pattern of their customers. They have the power to market other destinations than the traditional holiday destinations and travel time.
- Transport. Transportation is very depending on weather conditions and climate-related disasters. Tourism is very depending on transport. However, infrastructure is often established by government, which makes it hard for the sector itself to implement changes. Yet, the tourism sector can lobby with governments for better and more climate condition proof infrastructure. Talking about tourism transport services, more action can be taken by the company itself. Tourist vessels could check the weather forecast daily. With that they can plan the safest and most economical route. Aircraft safety can be increased by reducing passenger comfort and increase investments in advanced technology.
- Resource base. This can be divided into natural and human resources. The former includes, among others, coastal and marine ecosystems, landscapes, ground and surface water, and the atmosphere. The latter contains individual and collective knowledge, understanding and skills; institutions; financial services; and planning, legislative and regulatory instruments. Adaptation for the natural resources mainly focus on the protection and restoring of ecosystems and diminishing the direct and indirect impacts of tourists in the area. Appropriate initiatives incorporate managing habitats for rare, threatened and endangered species; education and awareness programmes could be established for tourists; monitoring results and, when necessary, changing management practices. The human resources can adapt by improving the knowledge and understanding of the changing climate, also focusing on the future.
- Tourist. Climate is a very important component for the enjoyment, satisfaction, health and safety of the tourist. So, when the climate change, it is going to be very likely that

the experience of the tourist will be effected as well. An example of an adaptation measure that already has been implemented in Australia is to close a walking track on days when maximum temperatures are projected to reach 36˚C. Another action that can be taken on destinations with highland and beaches, is to stimulate the tourists for a day trip to the highland when temperatures are too high for the beach. Furthermore, by improving the regulations and monitoring of food hygiene will reduce the risks to public health related to food contamination.

- Sustainability. The last component has an eye on the future. To generate benefits from the tourism sector in the future, it is of high importance that climate-related risks are manageable and dealt with at present day. Adaptation strategies for dealing with bad weather events include the improvement of dykes and drainage systems to survive strong hurricanes and typhoons; establish and implement flood protection; improvements of evacuation routes; strengthening of buildings and infrastructure for floods; develop flood-potential maps; and protecting and restoring coastal defences.

The information above shows that there are many possibilities for the tourism sector to adapt to climate-related disasters and changes. Unfortunately, there is no climate change adaptation procedure in the tourism sector yet to implement these adaptation strategies successfully, but Simpson (2008) recommends the follow steps to be taken, gained from experiences in other economic sectors. These steps are based on formally planned adaptation. First, engage the stakeholders; second define the problem: screening assessment of vulnerability; continue with an assessment of adaptive capacity; then identify adaptation options; after that, the options should be evaluated and a course of action should be selected; implement adaptation; and finally monitor and evaluate the adaptation measurements.

Conclusion

This chapter has provided more information about the cause of climate change and the consequences of it in general and for the tourism sector. Fast growth of human population, the large use of fossil fuels as an energy source, and industrialization are the causes of today's climate change. This change in climate has many consequences of which the increase in frequency and power of climate-related disasters is one of them. This in turn can have negative impact on the economic development, especially in developing countries as they lack the financial capital to adapt more quickly than the developed countries are able to. In these developing countries tourism is often used as a source of income and therefore it is required

for the sector to be able to deal with climate-related disasters. Besides that, tourism is an important income source for the population in developing countries, the sector is very much depending on the climate, as well as contributing to changes of the climate. For that reason it is of high importance that more research on this topic will be done in future so that the tourism as a tool for economic development can be maintained.

2. Regional framework

To better understand the context of this research, this chapter will introduce the Philippines. Attention is paid to topics that are relevant to this research, namely: the history, politics and the economy. Furthermore, a general introduction of the country and the people will be briefly mentioned. These topics partly explain the situation of the country as it is today.

The Philippines and its almost 95 million inhabitants is located in South East Asia and is composed of about 7,100 islands, which have been divided into three major island groups: Luzon, Mindanao and the Visayas (World Bank, 2013a; Jose & Cruz, 1999). Luzon is located in the north of the Philippines, the Visayas in the middle, and Mindanao in the south. The country is known for being 'different' from the rest of Asia, which is mainly caused by about 400 years of colonisation by the Spanish and Americans. In fact, it is the only nation in Asia where Christianity is predominant (Zaide, 1970).

2.1 National context

To understand the situation of a region, the national context should be described. Themes that are relevant to this research and discussed below are: the history, politics and the economy of the Philippines.

2.1.1 History

The Filipino history is mainly characterized by occupation. Since the sixteenth century, the country has been occupied by the Spanish (Szczepanski, 2013). This started in 1521, when the Spanish claimed the islands in the name of King Philip II and from that moment on the island group where called the Philippines. However, it was not until 1565, after three further expeditions, that the Spanish secured a permanent foothold on the country (Newson, 2006). After 350 years of occupation, the Spanish left many permanent marks in the characteristics of the Philippines and its society. The era of Spanish occupation was characterized by the exploitation of indigenous population and the growing influence of the church. Religious actors were active in the foundation of many cities, the governance, education and the administration of welfare activities. Furthermore, hospitals and orphanages were also established by members of the church. One of the goals of the Spanish invasion was to convert the population of the Philippines to Christianity. Unfortunately, the results of this invasion were not beneficial for the original inhabitants of the Philippines (Nilan, 2006).

The majority of the Filipinos were against the foreign occupation, but some, mainly the elites, saw benefits for themselves and cooperated with the Spanish. In 1896, the Filipino resistance

was that strong that it became a national struggle: the Philippine Revolution (Schirmer, 1987). After the revolution the country got its independence, which unfortunately did not last long. Two years later, in 1898, the Philippines became a colony of the United States after the Spanish-American war (Jezek, 2012). Although the beginning of American occupation took hundreds of thousands lives, directly and indirectly, the relationship between the nations is often remarked as 'friendly' (Tupas, 2003). Though, a division in the Philippines remained between the locals that favoured the occupation (mostly the same elites as were doing this during Spanish occupation), and those that were against it. The United States had two main aims in the Philippines: to secure the nation as a market and source of raw materials for the States themselves, and to secure the country as a military strong-point from which the markets of China could be penetrated. The Philippines is full of raw materials and other products that could not be produced in the States. The plains and valleys of the country were very fertile and produce rice and coffee, sugar and coconuts, hemp and tobacco, wood and many other tropical products. Those that favoured the occupation also believed that the United States were occupying the nation to civilize and uplift the Filipinos (Schirmer, 1987). In fact, the Americans did stimulate development in the Philippines. They improved education, built bridges, roads and sewage systems, and an American-style political system was implemented that, eventually, gave more power to the Filipinos (Bloom, 2009).

When the United States took over from the Spanish, the Philippines was a highly agricultural economy, which was characterized by its inefficient methods of production, concentration of landholding and widespread poverty. Progress was made by the Americans by investing in infrastructure and education. However the Philippines was almost entirely dependant on the United States as market and supplier of manufactured goods. After about fifty years of occupation and the use of American economic policy towards the Philippines, the policies were not encouraging diversification and long-term development for the country (Jenkins, 1954).

After a short Japanese occupation during World War II, the Philippines got their independence in 1946 (Jezek, 2012). From which moment onwards the country was officially called 'Republic of the Philippines' (Zaide, 1970).

2.1.2 Politics

Since the independence of the country, the Philippines has been a democracy, a presidential republic and, due to influences of the Americans, divided into three interdependent departments: executive, legislative and judicial. The executive department contains the

president, vice president, national security council, cabinet and major commissions and offices. A 24-seat Senate and a House of Representatives with 200 elected representatives and up to 50 more appointed by the president can be found in the legislative department. The supreme court is represented in the judicial department (Dolan, 1993).

The political system of the Philippines is known for being elite dominated. The economic and political elites have always held on tightly to retain power. This has often a negative effect on the population. To illustrate, local elites often have an important role in the decision-making, including those to be favoured in participatory. Often this results into financing projects which are not most preferred by the community, but more benefiting the elite themselves (Lange, 2010). These power structures remain practically the same till today. Nowadays, politicians and officials still prefer families and acquaintances as employees. This results in a lack of faith in the government and local communities still have low expectations of and make minimal demands on the government (Balisacan, 2007).

Besides the large influence of the elites and lack of faith in the government, the Filipinos also have to deal with a decentralized government. Before the Revolution in 1986, the government structure of the nation was highly centralized. Since the Constitution of 1987, the country has been characterized by a decentralized government with a multi-layer structure: there was a national government, followed by the Local Government Units (LGUs), which again consists of three layers: provincial, cities and municipalities, and barangays (Diokno, 2009). A map of the Philippines divided into regions and provinces can be found in appendix A (Dolan, 1993). The switch from a centralized to a decentralized government gave more power, authority, responsibilities and resources to the local government units. LGUs had more spending responsibilities and resources, became more innovative in providing local public services, and had more control over their finances. However, the question remains if decentralization has been fully realized. The Local Government Act was introduced in 1991 and from the period 1993 to 2003 the national government has not really shrank (based on the number of personnel). Diokno (2009) mentions five national government departments in his research: agriculture, budget and management, environmental and natural resources, health, and social welfare and development. After more than 10 years of decentralization, the budget and management department has reduced their employment with 31% on national level, which means that more tasks are given to the LGUs, or tasks have been deleted. The other departments on national level all reduced by less than 1% and the department of environment and natural resources even increased by 8.5%. Based on these figures it can be concluded that

the government of the Philippines has been decentralized to a certain extend. Overall, the Philippines is still mainly dealing with a centralized government (Diokno, 2009).

2.1.3 Economy

The history and politics discussed in previous paragraphs are of great influence to the economic situation of the Philippines as it is today. The Philippines is categorized as a 'lower middle income' country. The past 10 years, the average annual growth has been at about 5% and even reached 7.6% in 2010, the highest in 30 years. The latest figures published (year 2011) show a GDP of US$224,8 billion and a GNI per capita on PPP of US$4,140 (World Bank, 2013a). The latter was still US$2,660 in 2003, so it has grown greatly the past decade (World Bank, 2013b). It can be concluded that the Philippines has experienced economic growth the last decade. But how did they realized this? As you can see in table 2.1, the share of GDP of the service sector has enormously increased. With a current contribution of 56%, it leaves the agriculture (13%) and industry (31%) far behind, and thus, is the economy of the Philippines slowly turning into a service industry.

Table 2.1: Contribution per sector of GDP of the Philippines (in%)

Sector	1982	1987	1992	1997	2002	2007	2011
Agriculture	23	24	22	19	13	12	13
Industry	39	34	33	32	35	33	31
service	38	42	45	49	52	54	56

Source: World Bank, 2013b

The first decade of the twenty first century the Philippines became known as one of the best performers in service exports, mainly in business process outsourcing (BPO). It is ranked as third largest player of the world in BPO with a share of 15% of the global market. According to Bert Hofman of the World Bank (2011): *"The liberalization of the Philippine telecommunications sector in the early 90s improved the quality and efficiency of telecommunications infrastructure through greater competition. That's a very important factor for the success of the industry. But the bigger story is really the rich human capital that the country possesses and which it has to continue to nurture."* Besides BPO, tourism is an important player in the service sector as well. This sector could contribute to the diversification of the economy, to higher and sustained economic growth and reduce poverty. So as well as the investment in the telecommunication sector as the simulation of tourism has increased the share of the service sector to the nations' GDP enormously (World Bank, 2011). More in depth research about the impact of the tourism sector will be discussed in chapter 4.

Besides, exporting services has become very important to the country, as it grew 150% from US$4 billion in 2004 to US$13.3 billion in 2010. Within the total services exported other business services represents 48%, travel 21%, and computer and information services for 16% (NEDA, 2011).

Although this seems as a positive economic development in the Philippines, still 26.5% (2009) of the entire population lives under the national poverty line (World Bank, 2013). This means that the economic progress that has been realized the last decade, did not favour the poor of the Philippines. The upcoming service sector generates opportunities for the Filipinos that are well educated and speak English fluently. However, a large part of the population do not meet these requirements.

2.2 Regional context: the Central Visayas – region VII

Map 2.1: Central Visayas in the Philippines

Now the national context is explained, it is time to describe the situation on a more regional level. This part of the regional context will introduce the regional, provincial and local levels in where the research takes place. As noted above, the Philippines is dealing with a decentralized government with much financial power being given to the LGUs – provinces, municipalities and barangays. Besides these layers of government, the Philippines also work within regions. Region VII, also known as Central Visayas, is one of those regions, located in the Visayas, one of the three island groups mention in the beginning of this chapter. This study only emphasizes the Central Visayas, which include the islands of Cebu, Bohol, Negros Oriental and Siquijor (Balada, personal communication, April 11, 2013). The two research areas are Malapascua Island and Camotes Islands. These are tourism hotspots in the country, but at the same time located in a climate-related disaster prone area. Both islands

are part of Cebu Province, which, as mentioned above, is part of region VII. Following paragraphs will introduce the areas individually.

Central Visayas – Region VII

Geographically spoken, the Central Visayas and its population of 6,8 million in 2010, is located at the centre of the Philippines, between Luzon and Mindanao. The region is surrounded by the Visayan Sea at the north, Camotes Sea and Camigao Channel is located at the east, the Mindanao Sea in the south and Negros Oriental province at the west. Of region VII the biggest share of land area is covered by the province Negros Oriental with 36.1%, second is Cebu province covering 34.1%, third Bohol with 27.5% and the smallest province of region VII is Siquijor with only 2.3% share of the land area (Department of Tourism Philippines, 2005).

Over the past two years, the Central Visayas' economy continues to be one of the fastest in the country. In 2010, the region experienced an increase of Gross Regional Domestic Product (GRDP) of 12.5% and in 2011 this was about 8%. Both years, the regional results were higher than the national GDP which was average 3.6% and 7.6% respectively (Manila Bulletin, 2013). Nevertheless the region experiencing such growth, in 2009, still 30.2% of the population were living in poverty. Thus, although the region experiences these economic growths, yet a third of the population still lives in poverty, which means that the economic development is unequally divided among the population and therefore it is very likely that the gap between the rich and the poor will continue to grow.

How come there has been such steady economic development in the region? And of more importance what are the drivers? Cebu City has been booming for many years now. Numerous international organizations are establishing business in the city, which impacts the entire region. The main focus of these international organizations is the service sector, which, in 2011, had a share of 55.8% of GRDP. This was followed by industry with 36.4% and 7.8% was contributed by agriculture, fishery and forestry. Remarkable is that, although the share of agriculture, fishery and forestry is less than 8% to GRDP, this sector still covers almost a third (31.2%) of total employment in this region (CountryStat, 2013). Thus, it is only a small portion of the population that benefit from the economic growth and service sector. This also applies for the province, municipalities and barangays.

Cebu Province

In 2007, the province of Cebu had a population of 3,85 million, with an average population growth of 1.68% since 2000 (NEDA, 2012). Although the national government of the Philippines has re-called the Visayas as 'the central Philippines tourism region'(Clausen, 2010), not the entire population depends on this sector. Besides tourism, the IT sector is booming at the moment. Tourism shows a steady increase. Other sectors such as agriculture and fishery have less influence in this province. Similar to the regional level, agriculture is small in contribution to economic development, still an enormous amount of employees are active in this sector (Guantero, personal communication, April 10, 2013) and in 2006, still 1,077,492 people were living in poverty (28.20%), which equals 184,207 families (23.50%) (NEDA, 2007).

Area 1: Malapascua island

Map 2.2: Malapascua Island

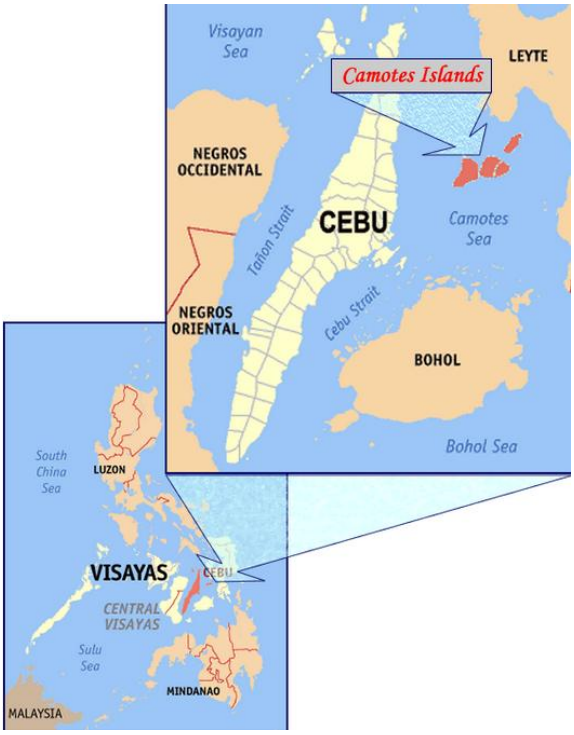
Malapascua Island is situated across the northern tip of Cebu province and is part of the municipality of Daanbantayan. The origin of the name of the island is actually very related to the topic of this research, namely the natural disasters. The island was discovered by the Spaniards on Christmas Day. What should have been a celebration day, was ruined by a storm which hit the island and so came the name 'Malapascua' (Malas Sa Pasko), which means 'Unfortunate Christmas'. It is a small island of 3km. long and only 1 km. wide, with a population of about 4,000 (Department of Tourism Philippines, 2005).

Before tourism was established in Malapascua the local population was mainly active in fishery. In 1992, the first accommodation was built on the island. It all started small, but has been growing ever since. Today, more than 20 accommodations are established on the island and according to Mike Wieland, owner of Mike & Diose's Beach Cottage, the number of accommodations and the size of them are enlarging by the month (Wieland, personal communication, May 23, 2013). Many of these accommodations are located at the beach, at risk to climate-related disasters, and often at least partially owned by Europeans. None of the accommodations is part of a large multinational chains and most try to support the local economy as much as they can. As many Europeans are located here, the majority of the tourists tend to be from Europe as well, and are mainly visiting Malapascua Island for diving.

For a good dive, the weather is important. However, the island is located in a prone area for climate-related disasters, which are affecting the diving conditions. Usually the weather is good on the island, however Malapascua does experience a couple typhoons a year. Just as it is in the entire Philippines, the typhoon season is from May to December. Normally the typhoons pass to the north, and because the island does not have mountains, the rain tends to fall in other parts of the Philippines (Malapascua, N.D.). However, in 2008, Malapascua was in the eye of a storm, which caused a lot of heavy damage to the island (Ocean Vida, 2011).

Area 2: Santiago, San Francisco, Camotes Island

Map 2.3: Santiago, Camotes Islands



The second research area is barangay Santiago, part of municipality San Francisco, Camotes Island. Camotes Island is also known as Cebu's best kept secret, is situated northeast of Cebu and is composed of four municipalities, namely: San Francisco, which consists of 15 barangays (villages) and 41,327 inhabitants (year 2005); Poro, composed of 17 barangays with a population of 21,397 in 2005; Tudela, includes 8 barangays with a population of 10,401 in 2005; and Pilar island, which consists of 5 barangays and 11,226 inhabitants (year 2005) (Department of Tourism Philippines, 2005; Provincial Development Council, 2013).

Compared to Malapascua Island, Camotes Island is less dependent on the tourism sector. Of the four municipalities (and islands) San Francisco is the most developed in tourism. The others are still mainly depending on agriculture and fishery. Throughout the municipality, several areas are focusing on tourism development, however barangay Santiago is most developed in tourism. There are no exact numbers, but by observation can be said that many inhabitants of Santiago are depending, direct or indirect, on tourism development. Besides the 11 accommodations, several restaurants and massage salons are established to provide services for the tourists. All these are providing employment for locals. Indirect, also, fishermen and farmers are gaining employment by supplying food for the visitors. In contrast

to Malapascua, that is mainly receiving European tourists, the visitors to Camotes are mainly from Asia.

As in Malapascua, tourism in Camotes is also dependent on the weather primarily because the island is only accessible by boat, but also since the primary products are outdoor activities like beach visits and island tours.

Like the rest of the Philippines, Camotes Island's weather is characterized by dry seasons and monsoon seasons. During monsoon season (early June – mid-August and early November – end January) strong waves, heavy rainfall and high seas are expected. Which may bring flooding to the island (TravelCamotes, 2011). However, according to Limosnero (2013), Santiago is protected for typhoons by its natural environment. Due to the coral reef in front of Santiago, and the long distance of shallow water, a possible big wave (as a consequence of a tropical cyclone), will be reduced by the coral reef and shallow water. Therefore, the power and height of the big wave, and the chance for flooding, will be reduced and will bring less damage to the barangay Santiago.

Conclusion

Due to the colonization of the Philippines, the country is characterized by Spanish and, mainly, American influences. One of the consequences of the colonial era, and is relevant to this research, was the power that was given to the elite. Throughout the years this has not really changed, although attempts continue to be made. The power to the elite, results in a lack of faith in the national and local government actors from local residents. This lack of faith is important to highlight in this research as one chapter is discussing the response of the government to climate-related disasters. When a government is not supported by its people, it could result in barriers to the implementation of good policies.

Furthermore, this research has its focus on the tourism sector, which generates economic development. Discussing the economy in this chapter, will give you a better idea of the economy in the Philippines and the importance of the service sector (including tourism). As you have read, the service sector has been booming. This ensures an increase of GDP, however also an increase in the gap between the rich and the poor. This is something to consider when there is mainly a focus on developing a sector, and attention is lacking in reducing poverty. So it can be questioned if the rise of the service sector really profits the Filipinos, as only a small portion of the population is affected by it. The jobs provided by services are only interesting for the Filipinos that speak English well, however the impacts not reach the countryside where few tourists go. The tourism sector could provide some indirect

employment in the fishery and agricultural sector, however figures show that these sectors have been decreasing. Then, as a consequence of booming Cebu, many people of the countryside move to the city hoping to find work. However, many of them do not succeed and often become homeless. Cebu City may be booming, but it also has one of the highest poverty rates of the country. Chapter 4 will discuss more in depth if, and how, tourism is bringing benefits to the Filipinos, but what already can be concluded based on this chapter, is that the research areas Malapascua Island and Santiago, changed from a fishing island/village to a tourism destination. In both cases, the variety of income sources has been enlarged by the tourism sector. Due to tourism, employment can be found in accommodations, restaurants, massage salons and other services. Again, indirectly the fishermen and farmers benefit here as well.

3. Methodological framework

Now that the theoretical and regional framework are discussed, the question remains: what is this study exactly about? This chapter will introduce the research objectives and questions of which part two of this report will continue with.

3.1 Research objectives

The aim of the research is to explore part of the relationship between the tourism sector, economic development and climate (change) and its consequences. The part of the relationship where this study is focused on is the response of the Filipinos to climate as a barrier for (tourism) development. Climate change and its consequences has been a popular research topic for several years now, but, has reached the tourism sector only recently. The questions remains of how important this is for the Filipino tourism sector, or even in general in the Philippines. Or are there other problems or barriers more important for them to solve? This will not be a separate research question, but will be discussed in the conclusion. Whether adaptation to climate-related disasters is required or not according to the Filipinos, academics, such as Becken believe it is. Based on their conclusions this research is established with the following objectives:

- to introduce the current tourism sector in the Philippines and discuss how this is benefiting the population and economic development;
- to identify the characteristics of the climate, how this is changing and the consequences of these changes (special attention to the climate-related disasters);
- to find out how the Filipino government is dealing with climate-related disasters as this is seen as a serious barrier to (economic) development for the entire country;
- to find out how the Filipino tourism sector is dealing with climate-related disasters;

3.2 Research questions

These objectives can be translated into the following research question *'To what extent is the tourism sector prepared for safeguarding tourists and local communities for climate-related disasters?'*

To answer the main question of this study, several sub-questions have to be answered. The sub-questions for this research are:

5. What are the main characteristics of the tourism sector and what benefits does it bring to the local community? How does is stimulate economic development?

6. What are the main characteristics of the climate of the Philippines, and how is this changing? How is this a barrier for economic development?
7. How does the government safeguard their people and visitors for the (increasing) climate-related disasters?
8. How do tourism businesses safeguard tourists and local communities for the (increasing) climate-related disasters?

3.3 Methodology

To answer the main research questions and the sub-questions information must be gathered. The information needed for this study can be categorized into several groups. Firstly, the research is focusing on the tourism sector as a way of creating economic development. Thus, information is needed about the tourism development and the contribution to economic development. Secondly, the study also emphasizes the increase of climate-related disasters in the Philippines. So for that reason, information about the climate, the changes and the consequences needs to be gathered as well. Thirdly, and finally, these two categories need to be combined – how the tourism sector deals with these disasters.

Information for the first two categories – tourism sector and climate-related disasters – will be mainly found in secondary literature, such as scientific articles and related studies. Besides literature, mapping will be used to clarify the areas where both categories play a role. This is necessary to decide which areas are most adequate for the research to study upon. Combining the map showing active tourism areas with the map of areas most affected by climate-related disasters, will result in the most adequate regions. Depending on the literature available about these categories, additional information can be achieved by interview(s) with scientist(s), such as climatologists and economists, that have more in-depth information about future predictions of the changing climate and how this could be a barrier for economic and tourism development.

The third category needs a different approach to gather useful information. Study about the tourism sector dealing with climate-related disasters is still in its infancy, resulting in lack of written literature. Therefore it is necessary to gather information in the field, via interviewing stakeholders involved. In this case this would be the (local) government and owners/managers of accommodations. Semi-structured interviews are held among different governmental departments, such as the Office of Civil Defense (OCD), and the Provincial, Municipality and

Barangay Risk Reduction and Management Councils. Furthermore, the information of the private sector is gained by semi-structured interviews as well, but with the accommodations in both research areas.

Based on the following criteria the two research areas are chosen: (1) popular tourism destination in province Cebu, (2) most prone area to climate-related disasters in province Cebu, and (3) the extent of government involvement in DRR management in areas. Criteria 2 is already briefly discussed in the regional framework. Criteria 1 and 3 will be addressed in chapter 4 and 6 respectively. Camotes Island is chosen on purpose, as the LGUs have an active approach towards DRR. Because of their approach their DRR management plan is awarded by the UN for best practice. In contrast to the LGUs of Camotes Island, are the LGUs of Malapascua Island. Here government involvement related to this topic is inadequate. The contradiction of government involvement could lead to different approaches in dealing with climate-related disasters and therefore interesting conclusions may be found.

Having introduced the methodology for the research, it may be clear that this research is mainly based on qualitative research. The operationalization of the variables can be found in the following table. To clarify, gathered information cannot be analyzed in statistical matters and therefore not, in that sense, measurable. The table shows per category the most important information needed and how it is to be gathered.

Category 1: trends of tourism development	
Information needed	*How to gather*
History of tourism development	Statistics
Current situation in tourism development	Statistics
Benefits for local community	Literature Interview
Location of tourism areas	mapping

Category 2: trends in natural disasters	
Information needed	*How to gather*
Current situation of Philippines and climate-related disasters (which disasters are a threat?)	Literature Interview
Location of threaten areas	mapping

Category 3: how the tourism sector is dealing with climate-related disasters	
Information needed	*How to gather*
Which areas to study	mapping
Tourism and climate change and related disasters	Literature Interviews

Adaptation strategies	Literature interviews

The gathered information will give several results. The expected results of this research will provide information about the current situation and approaches by government and tourism sector in dealing with climate-related disasters, thus how to adapt to these climatic characteristics. At the end this research may benefit for the following:

- the local tourism businesses;
- the community in which it is located;
- protect the tourism sector by informing the tourists with their proactive approach towards natural disasters.

3.4 Limitations

However, limitations can have a negative effect on the (expected) results. In western countries climate change and the related consequences is a more developed and studied subject than in most developing countries. Therefore it is possible that the local tourism businesses do not see the need to adapt their approach towards the natural hazards. They are used to it and do not know better. It is for that matter of high importance to raise awareness and provide information about the consequences.

A second limitation could be the lack of cooperation of (local) government and stakeholders involved. Without their knowledge and interest it is difficult to define which adaptation strategies are adequate.

A third limitation for the research could be the lack of adequate literature about adaptation strategies that could be implemented in the tourism industry. As mentioned earlier, this is still in its infancy, therefore it is required in this study to be creative with the sources available. This means to analyze whether adaptation strategies implemented in other sectors will do for the tourism sector.

Part two

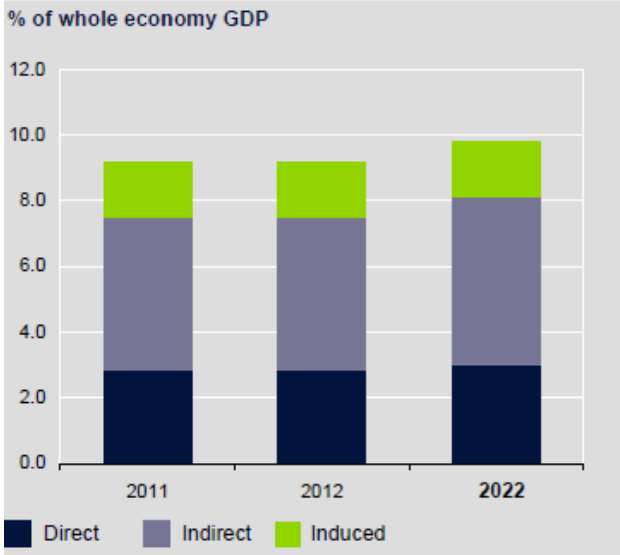
4. Tourism in the Philippines

This chapter contains information that will answer the first research question: *What are the main characteristics of the tourism sector and what benefits does it bring to the local community? How does is stimulate economic development?*

To answer this question, it is of importance to discuss how tourism has been developed in the Philippines over the years, and what the attractions are. Based on statistical information the development of tourism in the Philippines will be shown. After that, attention will be given to the benefits of the tourism sector for the local population.

First, let us briefly introduce the economic contribution of the tourism sector worldwide. Tourism is seen as one of the world's largest industries and there is no denial that tourism has a major economic power. In 2011 and 2012 the sector was responsible for 2.8% of world's GDP, directly and 9.1% indirectly. The World Travel & Tourism Council (WTTC) has forecasted that the indirect contribution will increase to 9.8% of world's GDP in 2022 (see figure 4.1). The difference between direct and indirect is that the former contains commodities like accommodation, transportation, attractions and entertainment, and industries like accommodation services, food and beverage services, transportation services and recreational services. Indirect contribution contains the investment spending by the sector as well as the government. Induced contribution represents the spending of direct and indirect employees involved in tourism (WTTC, 2012).

Figure 4.1: Total contribution of travel and tourism to world's GDP



Source: WTTC, 2012

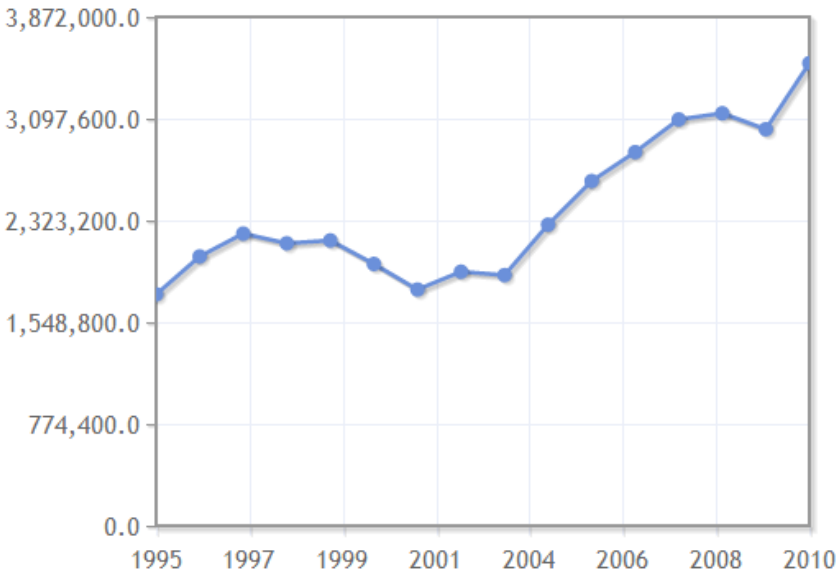
Tourism contributes for 6% of the world's export in services and with that it is the fourth largest export sector in the world after fuels, chemicals and automotive products. In total, tourism is responsible for 235 million jobs worldwide, which means one in every twelve jobs. Although the global economy has not yet been recovered, major political changes occurred in the Middle East and North Africa, and natural disasters in Japan, the international arrivals grew by over 4%, reaching 982 million travellers in 2011 (UNWTO, 2013). This shows that, nevertheless the world is experiencing changes that could affect international tourism, the sector is strong and maintain to grow. All continents experienced growth, with Asia and Africa as frontrunners (7% and 6% respectively), followed by the Americas and Europe. Only the Middle East experienced a decline of 1% (UNWTO, 2012b).

Now that we have seen that tourism is a important economic power globally, the question remains: how is this in the Philippines?

4.1 Statistics of tourism in the Philippines

The Philippines is only recently turning into a serious tourism destination in southeast Asia. In 2006, the government established 'super regions' in the Philippines with Central Philippines as tourism region (Clausen, 2010) and its vision statement was formulated as follow: '*the Central Philippines will be a significant destination that offers direct international access, seamless interconnectivity, world-class tourist facilities and products that meet the demands of tomorrow's tourist. The Central Philippines will achieve these through the sustainable development of tourism products, environmental protection and enhancement, underpinned by adequate infrastructure with rational management of the destinations, capacity building, investment promotion, effective marketing and an improved business environment'* (DOT, 2009b). The focus on tourism development has paid off. In the period 1995-2005 the increase of international visitors was less than 1 million. Since the introduction of the tourism region, the number of tourists has faster increased than before. In the period 2006-2012 the number of visitors increased with about 1.5 million. In 2012, the Philippines hosted 4.3 million international tourists, which is the first time that the country pasts the 4 million visitors (DOT 2012b).

Figure 4.2: International tourism, number of arrivals in the Philippines



Year	Value
1995	1,760,000
1996	2,049,000
1997	2,223,000
1998	2,149,000
1999	2,171,000
2000	1,992,000
2001	1,797,000
2002	1,933,000
2003	1,907,000
2004	2,291,000
2005	2,623,000
2006	2,843,000
2007	3,092,000
2008	3,139,000
2009	3,017,000
2010	3,520,000

Source: IndexMundi, 2013

Thus, the flow of international tourists arrivals is increasing, but it might be of more importance for the Philippines, if this also contributes to their economy. In 2012, the tourism sector contributed for 2% directly to gross domestic product (GDP) and is expected to increase to 2.5% in 2023. Indirect, in 2012, the tourism sector is responsible for 7% of GDP and is predicted to reach 7.8% in 2023 (WTTC, 2013).

One of the reasons that causes the growth in tourism, is due to the increase of international arrivals and the increase of expenditure per day by the tourists as well. In only 4 years, 2008-2011, this has increased with about US$15 per day, while the length of the stay is getting shorter (see table 4.1). But does this means that the tourists also spend more? In 2008, the tourist was spending an average of US$704 (average length of stay times average expenditure per day) in the country, and this has increased to US$739 in 2011. So, yes, in this period the tourist increased their spending. However, before the worldwide financial crisis, the tourist was spending about US$870 (year 2007). Thus, the spending of the tourist is increasing, nevertheless is still below the expenditure of before the crisis.

Table 4.1: Average length of stay and expenditure per day

Indicator	Units	2007	2008	2009	2010	2011
Average length of stay	days	10.03	9.40	8.83	8.01	8.04
Average expenditure per day	US$	87.0	74.9	75.8	83.9	91.9

source: UNWTO, 2012a

Now we know that the international arrivals and their expenditures are increasing, the following question would be: where do they go to and where do they spend their money? In 2011, the regions that hosted the most visitors are Region IV – A Calabarzon (3,699,317 visitors), Region V – Bicol Region (3,122,156 visitors) and Region VII– Central Visayas (2,366,972 visitors) (for regions see appendix A). These number surpass the amount of international tourist arrivals on a national level, as many tourists visit more destinations or regions during their trip and these figures also include domestic travellers. The regions with the highest growth rate are Region III – Central Luzon (189.14%), Region VIII – Eastern Visayas (157.62%) and Region IV – A Calabarzon (45.72%). Region VII – Central Visayas had a growth rate of 7.69% (DOT, 2012a). Based on these figures it can be said that Region VII – Central Visayas is a popular destination within the Philippines for tourists, though other regions are increasing in popularity. Within the Central Visayas, the distribution of tourists to the different provinces is unequal. As you can see in table 4.2, Cebu province is by far the most visit island of the region. This is very likely due to the fact that Cebu City is a transportation hub and therefore many visits are planned to go there.

Table 4.2: Distribution of travellers in the Central Visayas in 2011

Region	Total visitors	Growth rate
Region VII – Central Visayas	2,366,972	7.69%
Bohol	334,212	1.96%
Cebu	1,772,234	8.26%
Negros Oriental	234,919	10.64%
Siquijor	25,607	15.73%

Source: DOT, 2012a

Within Cebu province several tourism destinations can be marked. The main attractions are given in the following table and appendix B shows a map of Cebu with the locations of the attractions:

Table 4.3: Top 5 tourism attractions/destinations Cebu Province

Name/area	Type of attraction
1) Malapascua island/ Bantayan Island	Dive site
2) Camotes Island	Eco-tourism, white beach
3) Moalboal Beach/ Pescador Island	Dive site, white beach
4) Sumilon Island/ Oslob	Culture and heritage/ dive site
5) Bojo River, Balamban	Eco-tourism, adventure

Source: Provincial Development Council, 2013

Based on the top 5 most popular destination and their attractions within Cebu Province, it can be said that the majority of the destinations are popular for their dive sites and beaches, so mainly beach holidays. Besides, the two research areas of this study are the number one and two most popular destinations in the province.

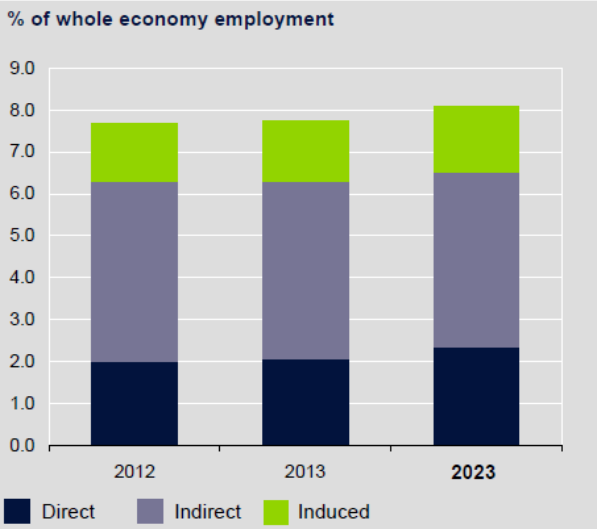
There is no statistical information provided by tourism officials in Malapascua, but one of the owners of the accommodations established a website with detailed information about the island. Last updated in 2011, Malapascua Island counts 43 accommodations, ranging from luxurious resorts, to small scale guesthouses or rooms. Unfortunately, no information can be found about the number of visitors and their nationality to the island, but based on observation it can be concluded that the majority of the tourists were foreigners, mainly European. Based on information gathered from interviews it can be concluded that of the estimated 4,000 inhabitants of Malapascua, a significant part is working in the tourism sector. for example, Exotic, the biggest resort on the island, has currently more than 120 employees, of which by far of the majority is Filipino. Smaller resorts, such as Blue Corals, employ about 14 locals and many of the accommodations are only run by the owners (De Dios, personal communication, May 24, 2013; Mischo, personal communication, May 25, 2013; Wieland, personal communication, May 23, 2013).

In contrast to Malapascua Island, Camotes Island has its own tourism office which provides statistical information. Also last updated in 2011, figures shows that the municipality of San Francisco counts 17 accommodations with in total 101 employees. Based on observation in 2013, barangay Santiago has 11 accommodations, with the majority, if not only, local employees. The accommodations in municipality San Francisco mainly host local tourists. Of the 26,995 visitors in 2011, 26,464 were locals, and only 531 came from abroad. The months April and May are by far the most visit months, which is the holiday period in the Philippines (tourism office San Francisco, 2013).

Thus it can be said that the tourism sector in Malapascua Island is generating significant employment and that in Camotes Island the sector is generating employment as well, although not in such large numbers as Malapascua shows. But how is this in general in the Philippines? In 2012, the tourism sector was responsible for 762,000 jobs directly, which is 2% of total employment in the country. This is predicted to grow to 804,500 jobs (2.1% of total employment) in 2013. The indirect employment generated by the tourism sector is given in figure 4.3. For the same year, 2,911,000 jobs were generated by the sector indirectly, which is

7.7% of total employment. For 2013, this is forecast to provide 3,028,500 jobs (also 7.7% of total employment) (WTTC, 2013).

Figure 4.3: Indirect employment generated by tourism in the Philippines



Source: WTTC, 2013

The nationality of the visitors of San Francisco has already been touched upon in previous paragraphs, but this is also interesting to summarize in general. From the 3,884,055 international tourist arrivals in 2011, East Asia and the Pacific had a share of 61.21%, followed by the Americas with a share of 19.19% and Europe 9.89% (UNWTO, 2012c). The top 12 of countries that sent the most tourists to the Philippines in 2011 is: Korea (23.62%), USA (15.94%), Japan (9.59%), China (6.21%), Taiwan (4.64%), Australia (4.36%), Singapore (3.52%), Canada (3.00%), Hong Kong (2.86%), United Kingdom (2.67%), Malaysia (2.34%), and finally Germany (1.56%) (DOT, 2011). Of the total direct contribution to GDP (absolute number unknown due to error in source) domestic travel spending generated 58.3% compared with 41.7% from foreign visitor spending. Furthermore it is worth mentioning that 72.1% of the total spending was derived from leisure spending and 27.9% from business (WTTC, 2013). Thus, based on the information mentioned in this paragraph, it can be said that the majority of the tourists in the Philippines are domestic, or from other parts of Asia and travel for leisure reasons.

4.2 Tourism and local communities in the Philippines

The establishment of the tourism region in central Philippines is done for a reason. Mentioned earlier in this report, tourism is seen as a measure to stimulate socio-economic development in

a country or region. The Filipino government has realized this and focuses now on tourism development in central Philippines.

That the central Philippines is mainly a dive and beach holiday destination is touched upon earlier in this chapter. This means that the tourism products of the country are highly dependent on their marine life and this is bringing benefits to the local communities. The Philippines has about 18,000km of coastal area, and according to White (2003) one square kilometer of healthy coral reef with tourism potential produces net revenues ranging from US$29,400 to US$113,000. So with sustainable tourism development, the coastal area of the country can generalize economic development for the communities located in this area. In areas where studies have been done, the economic benefits of tourism are surpassing those of fishing and other livelihoods. The socio-cultural characteristics of the Philippines are quite in favor for tourism development as English is commonly spoken, compared to other developing countries the level of education is high, people are naturally friendly and outgoing and many Filipinos travel and work abroad, which makes them international orientated and adaptable in their experiences. However, there is also a barrier for sustainable tourism development. Although the government is supporting this, in practice this is not always realized. Perhaps due to the enthusiasm of the LGUs, the development process is characterized as small-scale and poorly planned tourism development, and without taken the environmental and social pitfalls into account (White, 2003).

To illustrate how, and if tourism is beneficial for the local communities, the impact of tourism in both research areas is discussed here. The first case study is including tourism development and its impact on the livelihoods of local population in Camotes Island. Of the three islands that are included in Camotes, the tourism sector is mostly developed in San Francisco. The other two islands, Poro and Tudela are less developed. One of the reasons why San Francisco is more developed is due to the white sand beaches. Another reason is that the local population of this island is taking more initiative in tourism development. It started with Joel Pulvera, when he opened the first resort at Santiago Bay. He encouraged his relatives to involve in tourism as well by starting their own resort or other tourism-related business. Regarding the impacts of tourism to the livelihoods of Camotes, the following conclusions can be made:

- direct employment is mainly in the hospitality or cleaning sector. Indirect employment are mainly generated in fishery and agriculture as many of the resorts and other hospitality services buy their products on the local markets;
- income has increased for the families involved in the tourism sector. According to 25 out of 30 surveys among employees of resorts, working at the resort has improved their livelihood. They are able to support their family, it is improving their financial and personal situation, and they are more confident than before;
- improvement of infrastructure. Partly, due to tourism the government feels the need to improve and maintain their infrastructure, such as roads and waste management, as this is crucial for tourism development;
- knowledge. Tourism gives the opportunity to locals to learn new skills that are required in this sector. For example hospitality skills when working in the resorts, or becoming a dive master to work in a dive shop;
- the distribution of the benefits of tourism are unequal. San Francisco is obvious benefiting tourism more than the other two islands. On this island, the local population as well as the local government are having benefits. Poro and Tudela are not that much involved in tourism development and therefore do not experience the benefits yet;
- tourism mainly has a positive impact on the livelihood of the local population. the impacts are on a small scale as still relatively few locals are involved in the tourism sector in Camotes Islands

  (Berg, 2011).

Unfortunately, there is no such study done for Malapascua Island. The results discussed here are based on observation and conversations are held with the local population that is involved in tourism. Briefly discussed earlier in this research, without tourism the population of Malapascua Island was still mainly depending on fishery and agriculture. The development of the tourism sector has brought economic variety to the island. The initiative for tourism development is mainly coming from foreigners. The majority of the beach front resorts is owned by foreigners, often married to a Filipina. Since the start of tourism development here, many locals saw the possibility to benefit from this sector. Some of them established their own accommodations, many of them work for the accommodations (discussed in regional framework). Some of the benefits are likewise of those that are witnessed in Camotes Islands. Locals got the opportunity to extend their knowledge and skills, especially, when it comes to dive skills. The dive shops are training locals to become a dive master. One dive shop, Sea

Explorers (part of Ocean Vida Resort), is even offering loans to their employees. With this, employees can invest in their skills, families and livelihood. This also improves the economic situation of the employees. Infrastructure is different compared to Camotes Islands. Due to the lack of government involvement in Malapascua Island, there is actually no infrastructure, such as roads, a proper port and waste management. Roads are still sandy, which is for a small island as Malapascua, not a problem or barrier for tourism development. The port and waste management are seen as barriers according to the interviewees. The current port is lacking a adequate pier and the municipality of Daanbantayan refuses to gather the waste of Malapascua. Owners are responsible for managing their, and often the locals, waste. However, due to tourism development proper and steady electricity on the island has been realized in 2009.

All interviewees state that the government is holding back many possibilities for development as they 'just do not care'. This is derived from the last elections as the current mayor was not supported by the majority the population of Malapascua Island, the mayor refuses to invest in the island (Martin, personal communication, May 25, 2013; Micau, personal communication, May 24, 2013; Mischo, personal communication, May 25, 2013; De Dios, personal communication, May 24, 2013; Wieland, personal communication, May 23, 2013).

Conclusion

This chapter is written to answer the first research question of this study. It can be said that the tourism sector in the Philippines is slowly increasing their impacts, which are mainly positive. Tourism contributes to economic development, however is not equally divided among the Filipinos. Due to the active approach of the national government to stimulate tourism development to generate socio-economic development, the tourism sector is expanding throughout the Philippines, with mainly the focus in the Visayas. Malapascua Island and Camotes Islands are benefiting from the sector through the generation of direct and indirect employment, with the sector providing income to many locals and opportunities to gain relevant skills and knowledge. The fact is that the amount of locals dependent on the tourism sector is increasing. The climate-related disasters could be seen as a barrier for tourism and thus economic development. When a tourism area is not prepared for such disaster, the impact will be trickled down in the local economy when a disaster hits the area. The owner, employees, guides and farmers will experience a decrease in income due to the disaster. For that reason, it is of high importance to protect the sector for disasters.

5. Climate, and related changes in the Philippines

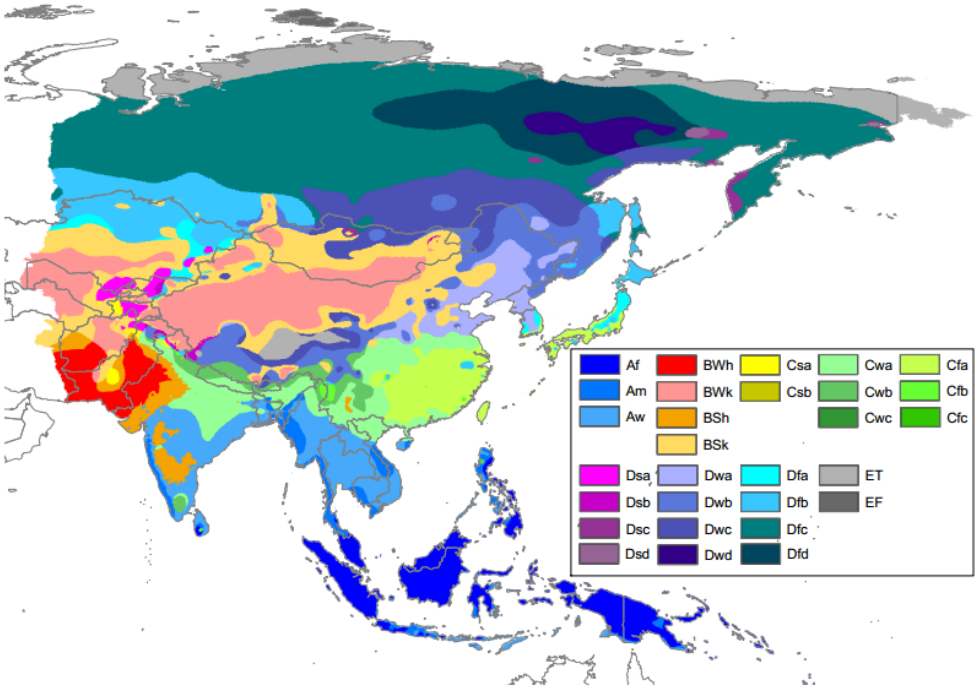
This chapter will provide more information about the climate in the Philippines and the related changes to this. The chapter will answer the second sub-question, *what are the main characteristics of the climate of the Philippines, and how is this changing?*

5.1 The climate of the Philippines and the Central Visayas

The world's climates can be classified by the most widely used Köppen Climate Classification System. This system includes five different classifications: A - Tropical Moist Climates: all months have average temperatures above 18° Celsius; B - Dry Climates: with deficient precipitation during most of the year; C - Moist Mid-latitude Climates with Mild Winters; D - Moist Mid-Latitude Climates with Cold Winters; E - Polar Climates: with extremely cold winters and summers (Physical Geograhy, 2010).

As for Asia, the classifications are quite diverse (figure 2). In this continent, all five climate types are present. The moist mid-latitude climates (D) with cold winters is the most dominant type which covers 43.8% of Asia. The second most dominant climate type are the dry climates (B) with 23.9%, followed by tropical moist climates (A) with 16.3%, moist mid latitude climates with mild winters (C) (12.3%) and finally 3.8% is covered by the polar climates (E) (Peel, 2007).

Figure 5.1: Köppen climate classification for Asia



Source: Peel, 2007

Focusing on the Philippines, it shows an A classification, a tropical moist climate. Three minor climate types are categorized in the A classification: tropical wet, tropical monsoon, and tropical wet and dry (Physical Geograhy, 2010).

Because the nation is characterized by a tropical moist climate the country has a minimum temperature of 18˚C all year and annual rainfall is often greater than 1500mm. The Philippines is mainly experiencing a tropical wet type of climate, however the west of the Philippines is characterized by tropical monsoon and few areas with tropical wet and dry climate.

Tropical wet climate entails rainfall spread throughout the year, average temperature during the day is about 32˚C and yearly temperature variations are generally less than 3˚C, due to high humidity and cloud cover the nights have an average temperature of 22˚C, and clouds with possible thunderstorms form frequently and early in the afternoons.

Tropical monsoon is characterized by rainfall equal or greater than tropical wet (range from 1500 to 4000mm), but most of the precipitation falls in the 7 to 9 hottest months, has a clear distinction between dry and wet season, the winter months are dry season with one or more months with less than 60mm of rainfall, yearly temperature variations are usually 2 to 6˚C and the hottest months are just prior to the start of the rainy season. This climate is categorized between the tropical wet and tropical wet and dry.

Tropical wet and dry, also known as savanna, has less than 1000mm rainfall during wet season, dry season is during winter and wet season is in summer months, at least two months a year have less than 60mm of precipitation, and the annual precipitation averages between 750 and 1800mm. This climate is known for having the highest monthly temperature of all three types of the tropical moist climate (Pidwirny, 2011).

To clarify the rainfall and temperature conditions per month, the following table should give a clear summary. This is based on the tropical moist climate, so applies for the whole Philippines.

Table 5.1: Rainfall and temperature per month, the Philippines

Month	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**
Rainfall	Dry						Rainy					
temperature	Cool			Hot								

The closest weather forecast complex in the research area is located next to Mactan International Airport, near Cebu City. According to Oscar Tabada (2013), regional director for Visayas at PAGASA, the figures measured at the office in Mactan can be used for the

province, yet small differences may occur in other parts of the island (Tabada, personal communication, April 25, 2013).

5.1.1 Rainfall

Rainfall is seen as the most important climatic element of the country. Depending on the direction of the winds and the location of the mountains, rainfall distribution varies from one region to another. The greatest amount of rainfall, 4,064mm a year, is received in the east Visayas and north Mindanao, while the south western area of Mindanao receives the least amount of rain, an average of 965mm annually (PAGASA, 2011d).

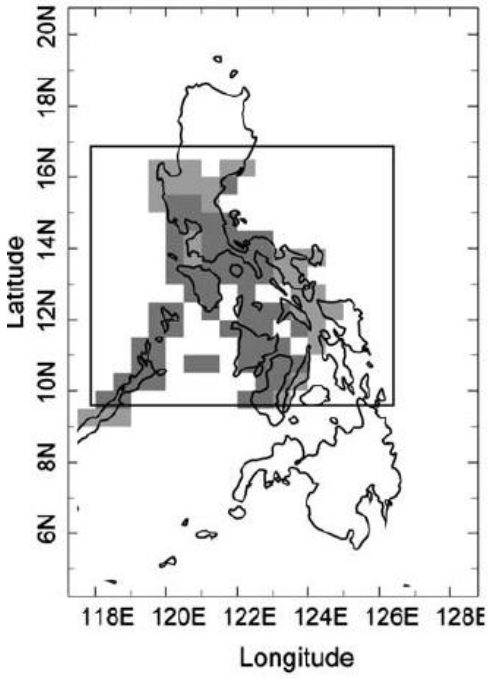
For Cebu City and surroundings, a total of 1547.9mm annually is measured and seasons are not pronounced. The city is characterized by dry and wet periods with February to April being the driest months with only 43.9mm of rainfall. The wettest month is September with a 188.7mm of precipitation. Cebu City is influenced by both the southwest and northeast monsoon and by the phenomenon El Niño and La Niña, which are active in the entire pacific area. A monsoon is a weather pattern, a consistent wind pattern generated by a large weather system that normally lasts for a couple months and is active in a large area of the planet. The southwest monsoon, also known as Habagat in the Philippines, creates summer in the country and therefore is responsible for hot and humid weather and a west or southwest breeze bringing frequent heavy rainfall. Habagat is mainly active from late April through to early October.

Winter is created by the northeast monsoon, in the Philippines also known as Amihan. This includes less strong, east or northeast breeze that is normally cool and dry (compared to Habagat) and has more often periods of cloudy days. Amihan usually starts in late September and early October until Habagat takes over again by the end of April (Tabada, personal communication, April 25, 2013; Puerto Galera Yacht Club, 2013).

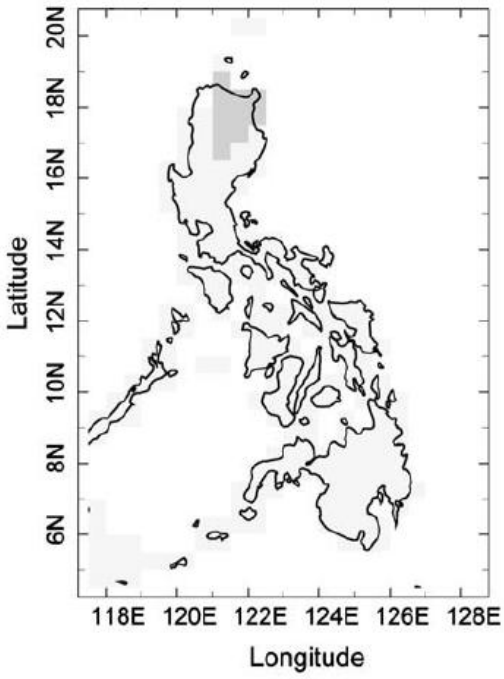
El Niño and La Niña are other weather cycles active in the Philippines. It is also often known as the El Niño-Southern Oscillation (ENSO). Many studies have been done about the influence of ENSO on tropical storms. During both El Niño and La Niña years, tropical storms tend to develop further to the southeast, or northwest when talking about La Niña, of their climatological normal locations. This shift in location leads to different climate patterns with more long lived and intense typhoons during El Niño years, and fewer and short-living once during La Niña. In the following figure the differences in rainfall of an El Niño and a La Niña rainy season are shown.

Figure 5.2: Regions of the Philippines with a statistically significant occurrence of above (dark shading) and below (light shading) average rainfall in (a) July-August-September and El Niño, (b) October-November-December and El Niño, (c) July-August-September and La Niña, and (d) October-November-December and La Niña. The relative shading within the above and below categories indicates the statistical significance level (90 or 95%).

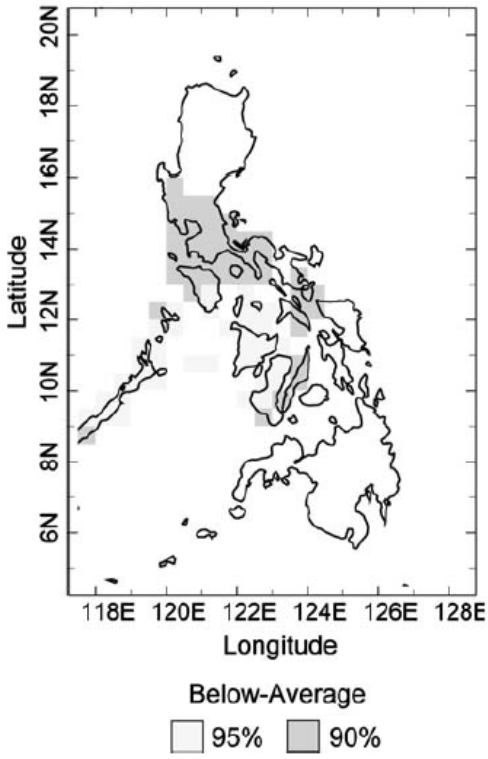
(a) July-August-September and El Niño



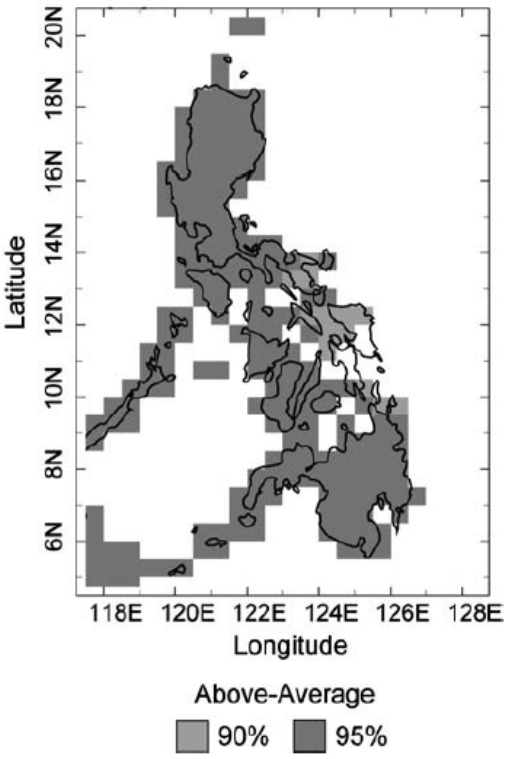
(b) October-November-December and El Niño



(c) July-August-September and La Niña



(d) October-November-December and La Niña



Source: Lyon, 2009

Figure 5.2 shows that during EL Niño, the months of July-August-September reveive much rainfall, mainly in the middle part of the Philippines. October-November-December are the wettest months of La Niña and heavy rainfall is expected throughout the entire country (Lyon, 2009).

5.1.2 Temperature and humidity

Temperature is throughout the year quite similar. Table 5.2 gives more information about the temperature and humidity of the peroid 1981-2010.

Table 5.2: Temperature in Celcius in Cebu

Month	Mean	Mean max.	Mean min.	Highest record	Lowest record	Mean relative humidity (%)
JAN	26.8	29.8	23.9	34.5	19.2	83
FEB	27.1	30.2	24.0	33.4	20.0	81
MAR	27.8	31.1	24.5	33.6	19.4	79
APR	28.8	32.8	25.8	35.4	22.3	77
MAY	29.3	32.8	25.8	37.0	22.3	78
JUN	28.8	32.1	25.4	36.3	21.4	81
JUL	28.2	31.5	24.9	35.3	22.0	82
AUG	28.4	31.7	25.0	34.8	20.0	81
SEP	28.3	31.8	24.9	34.6	21.8	82
OCT	28.1	31.4	24.8	34.2	21.6	83
NOV	27.8	31.0	24.7	33.8	22.2	83
DEC	27.3	30.2	24.3	34.2	20.5	84
Annual	28.1	31.3	24.8	37.0	19.2	81

Source: Tabada, personal communication, April 25, 2013

5.1.3 Tropical cyclones

The most interesting climate characteristic for this study is about the tropical cyclones that the Philippines is exposed to. An average of about 20 tropical cyclones cross the country every year and mainly occur in the rainy season (June-November). The cyclones can be divided into three categories: tropical depressions, tropical storms and tropical cyclones (also known as hurricanes or typhoons) (National Hurricane Center, 2005). The position of the country in the Pacific is what makes the country prone to tropical cyclones. The Pacific Ocean is located on the east, where many tropical cyclones arise. These cyclones turn to the west and then reach the Philippines. Globally, there are 130 cyclones annually, 30 of them are in the area of the Philippines. Out of these 30, there are 20 that make landfall (Tabada, personal communication, April 25, 2013).

With a total of 59 cyclones in the period of 1981-2010, Cebu and surroundings (radius of 100km from the station) is ranked third among the least visited by these cyclones among twelve such zones, and therefore is a relatively safe area in the Philippines. About half of the cyclones are categorized as typhoons and are mainly active from October until January. In appendix C, you can find information about the tracks of the cyclones that crossed the province of Cebu in 1948-2006.

5.2 Climate change in the Philippines

The concern about the changing climate also has reached the Philippines. The aspects mentioned above – rainfall, temperature and humidity, and tropical cyclones – are part of the climate of the Philippines. Because of the changing climate, these aspects are likely to change as well. The current climate is already causing barriers for development in the Philippines and when these aspects of the climate change (in a negative way), the barriers for development could increase. That the climate is changing in the Philippines is confirmed by Tabada, however it is still uncertain whether the changes occurred are due to natural, human or both causes (Tabada, personal communication, April 25, 2013). Despite the uncertainty of the cause of the changing climate in the Philippines, it is of high importance for this research to analyse what is changing in the climate. Below the same aspects are addressed as used in previous part.

5.2.1 Rainfall

From 1961-1998 trends in rainfall have been analyzed in South East Asia and the South Pacific. For the Philippines data shows that the number of rainy days has significantly decreased in the north, east and middle of the country (Manton, 2001), and this is predicted to continue in the future. Besides the reduction in rainy days, the dry months will become drier and the wet months will become wetter. Mindanao will suffer the most of reduction in rainfall for all seasons, and for Luzon and Visayas stronger monsoon winds have been predicted (Alcala, Bucol, Diesmos, & Brown, 2012). This means that during summer season (March, April and May) the amount of rainfall will reduce, and will increase in the months of June, July and August (southwest monsoon). The more extremes in wet and dry seasons can lead to more occurrences of floods and droughts, depending on the season (PAGASA, 2011b).

In addition to the change in the amount in rainfall, the months of rainfall are less predictable than before. Before the dry and wet season were quite obviously determined, however nowadays it can rain in every month (Tabada, personal communication, April 25, 2013). The

predictions for future rainfall for the Central Visayas are shown in table 5.3 and 5.4. A distinction is made between medium-range and high-range emission scenario, because aspects such as population growth and technology development cannot be predicted but do have an important role in future climate changes. For that reason, results of both scenarios are given. Medium-range emission scenario includes a prediction of the world with very rapid economic growth, global population peaking in midcentury and declining thereafter. In addition, new and more efficient technologies with energy generation balanced across all sources are introduced rapidly. The high-range emission scenario, indicates a world based on self-reliance, continuously growing population, a regionally-oriented economic development but with uneven per capita economic growth and technological change. No future rainfall predictions are made for the low-range emission scenario, which contains a world with local solutions to economic, social, and environmental sustainability, increasing global population, but at a lower rate compared to high range, intermediate levels of economic development, less rapid and more diverse technological change but focussed on social equity and environment protection.

Siquijor is not mentioned in the table, but values of Negros Oriental can be used.

Table 5.3: Seasonal rainfall change (in %) in 2020 and 2050 medium-range emission scenario
DJF = December, January, February; MAM = March, April, May; JJA = June, July, August; SON = September, October, November

	Baseline (1971-2000) mm				**Change in 2020 (2006-2035) in %**				**Change in 2050 (2035-2065) in %**			
	DJF	MAM	JJA	SON	DJF	MAM	JJA	SON	DJF	MAM	JJA	SON
Bohol	376.1	209.6	412.9	514.5	9.8	-7.1	4.5	6.8	21.2	-11.9	18.9	22.6
Cebu	324.0	228.3	595.1	607.4	17.7	0.8	7.7	7.7	19.6	0.5	18.9	17.8
Negros Oriental	225.8	226.0	639.5	636.9	15.0	-4.9	9.3	4.7	17.4	-6.8	20.7	10.5

Source: PAGASA, 2011b

Table 5.4: Seasonal rainfall change (in %) in 2020 and 2050 high-range emission scenario
DJF = December, January, February; MAM = March, April, May; JJA = June, July, August; SON = September, October, November

	Baseline (1971-2000) mm				**Change in 2020 (2006-2035) in %**				**Change in 2050 (2035-2065) in %**			
	DJF	MAM	JJA	SON	DJF	MAM	JJA	SON	DJF	MAM	JJA	SON
Bohol	376.1	209.6	412.9	514.5	-11.1	9.5	11.3	-6.7	-49.6	-6.8	5.1	-3.4
Cebu	324.0	228.3	595.1	607.4	-7.8	2.3	9.7	-3.4	-31.4	-1.8	11.7	2.9
Negros Oriental	225.8	226.0	639.5	636.9	-14.9	3.3	7.9	-5.2	-44.0	0.3	-1.9	-4.4

Source: PAGASA, 2011b

5.2.2 Temperature

Moreover, it is very likely that the entire country will witness warmer days, mainly in the relatively warmer summer months – March, April and May. The combination of less rainfall and warmer days can bring several consequences for, among others, the agricultural sector and water resources. In 2020 mean temperatures in the whole nation are expected to rise by 0.9˚C to 1.1˚C. For the year 2050 this is predicted to be between 1.8˚C and 2.2˚C. All these projected changes are relative to the climate of the period of 1971-2000 (PAGASA, 2011b). The following tables will show the regional temperature changes for the Central Visayas, again divided into medium and high-range emission scenarios. The temperature prediction is also measured under a low-range emission scenario, however is using a baseline of 1990-2000, but the source does not provide the absolute numbers of the baseline. For that reason, the low-range emission scenario is left out of this research.

Siquijor is not mentioned in the table, but values of Negros Oriental can be used.

Table5.5: Seasonal temperature increases (˚C) in 2020 and 2050 under medium-range emission scenario in Central Visayas.
DJF = December, January, February; MAM = March, April, May; JJA = June, July, August; SON = September, October, November

	Baseline (1971-2000) in ˚C				**Change in 2020 (2006-2035) in ˚C**				**Change in 2050 (2035-2065) in ˚C**			
	DJF	MAM	JJA	SON	DJF	MAM	JJA	SON	DJF	MAM	JJA	SON
Bohol	30.5	32.3	32.0	31.6	0.9	1.3	1.2	1.0	2.0	2.6	2.2	1.8
Cebu	30.6	32.5	32.0	31.7	0.9	1.3	1.0	0.9	2.0	2.5	2.0	1.7
Negros Oriental	30.6	32.4	31.9	31.6	0.9	1.3	0.9	0.9	2.0	2.4	1.7	1.8

Source: PAGASA, 2011b

Table 5.6: Seasonal temperature increases (˚C) in 2020 and 2050 under high-range emission scenario in Central Visayas.
DJF = December, January, February; MAM = March, April, May; JJA = June, July, August; SON = September, October, November

	Baseline (1971-2000) in ˚C				**Change in 2020 (2006-2035) in ˚C**				**Change in 2050 (2035-2065) in ˚C**			
	DJF	MAM	JJA	SON	DJF	MAM	JJA	SON	DJF	MAM	JJA	SON
Bohol	30.5	32.3	32.0	31.6	0.8	0.7	0.6	0.8	1.8	1.9	1.6	1.6
Cebu	30.6	32.5	32.0	31.7	0.7	0.7	0.5	0.7	1.7	2.0	1.6	1.6
Negros Oriental	30.6	32.4	31.9	31.6	0.7	0.6	0.5	0.8	1.8	1.7	1.5	1.8

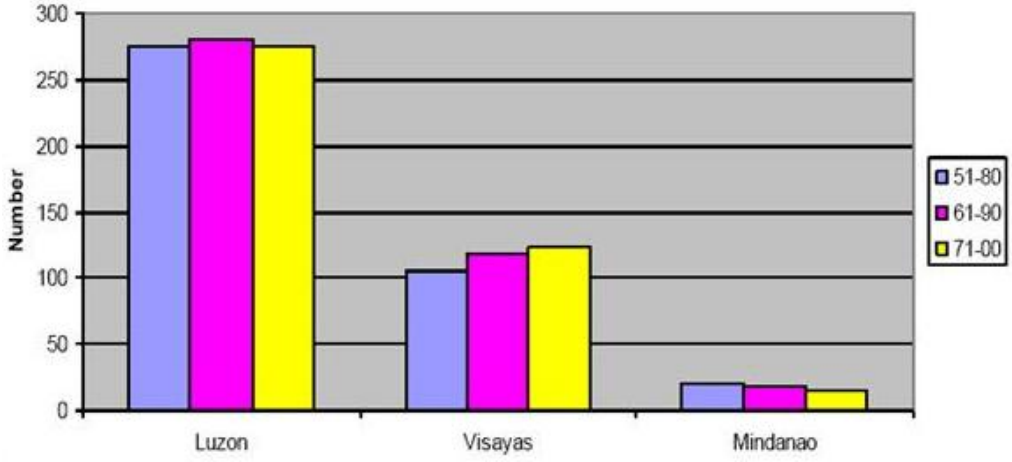
Source: PAGASA, 2011b

5.2.3 Tropical cyclones

Tropical cyclones are a part of the climate in the Philippines. The question is, do the frequency and/or power of them also change due to the changing climate? Many studies have investigated this topic, but have conflicting results. The changes in tropical cyclone activities in the past are not by definition caused by natural causes, it remains uncertain what the changes caused. Predictions for the future, based on theory and high-resolution models, constantly indicate that the warming by greenhouse gases will cause a shift towards stronger storms of the globally averaged intensity of tropical cyclones. The intensity of a tropical cyclone is likely to increase 2-11% by 2100. In contrast with the intensity or power of such tropical cyclones, the frequency of them are likely to decrease by 6-34% on average globally. However, the frequency of the most intense cyclones (typhoons) are predicted to increase with about 20% within 100km of the storm centre. This information is all based on a global scale. It can differ per country, but also variations do occur between different modelling studies and therefore should be dealt with caution (Knutson, 2010).

Despite of the conclusion of Knutson that cyclones are likely to decrease, the number of tropical cyclones in the Philippines has not drastically changed in the past few decades, only little changes have been noticed. First, information is gathered on how locals, and professionals, think about tropical cyclones. Based on that information it can be concluded that the pattern of the cyclones is changing. Before, mainly Luzon and the Visayas were hit by cyclones, but recently strong cyclones (typhoons) are also hitting Mindanao. Second, regions in the Philippines used to have a season for the cyclones, but nowadays cyclones also hit the country in April and May, which is normally not typhoon-season (Balada, personal communication, April 11, 2013; Sanchez, personal communication, April 5, 2013). Third, a slight increase of number of tropical cyclones is measured in the Visayas in the period 1951-2000, while Luzon and Mindanao show a slight decrease (see figure 5.3) (PAGASA, 2011a). This trend in the Visayas is likely to continue, which means that the amount of tropical cyclones in the Visayas is predicted to increase, which is in contrast with the conclusion of Knutson (Casis, 2008).

Figure 5.3: Trends in tropical cyclones in the Philippines



Source: PAGASA, 2011a

Furthermore, projections of tropical cyclones state that fewer typhoons will occur in January to March while the frequency will increase in July to November. The Visayas and Mindanao will be affected mainly in December due to warm sea-surface temperatures. In theory, warm sea-surface temperatures are causing more frequent and stronger storms. Information about the vertical wind structure, which among others influences typhoon development, is still lacking. Casis (2008) emphasizes further and more in depth study on climate change in the Philippines should be conducted. There is still inadequate research on the topic, however this is needed as research and information are the foundation of good policies (Casis, 2008). Unfortunately, more in depth information about the intensity of cyclones in the Philippines is not available at the moment, nevertheless PAGASA is stating that changes in intensity of tropical cyclones is projected (PAGASA, 2011b).

As well as PAGASA, a warning for the predicted change in intensity is also given by the Global Climate Risk Index, which states that the Philippines is the 10th most affected country by climate-related extreme weather events in the world in the period of 1991-2010, and is ranked 14th in the year 2010. This index indicates the level of exposure and vulnerability to extreme weather related events – storms, floods, temperature extremes and mass movements (caused by climate-related events). Earthquakes, volcanic eruptions or tsunamis are not included as these are not dependent on the weather and therefore not related to climate change. The data is based on direct impacts (direct losses and fatalities) of extreme weather events and therefore sea-level rise, glacier melting, more acid and warmer seas are not taken into account due to the fact that they are part of the indirect effects of climate change.

The index is based on the following indicators and table 5.7 provides the information of the Philippines: (1) number of deaths, (2) number of deaths per 100,000 inhabitants, (3) sum of losses in US$ in purchasing power parity (PPP), and (4) losses per unit of gross domestic product (GDP).

Table 5.7: Global Climate Risk Index Indicators and data of the Philippines
CRI = Climate Risk Index; Avg. = annual average figure for the period

Period	**Rank CRI**	**Death toll**		**Deaths per 100,000 inhabitants**		**Losses in million US$ PPP**		**Losses per GDP in %**	
		Avg.	Rank	Avg.	Rank	Avg.	Rank	Avg.	Rank
1991-2010	10	801.40	9	1.03	22	659.79	26	0.30	56
2010	14	244	11	0.26	38	970.86	18	0.26	27

Source: Harmeling, 2011

The index demonstrates that the Philippines is one of the most vulnerable countries worldwide regarding climate-related weather events. These events cannot be traced back solely to climate change due to human activities. Nonetheless, climate change is an increasingly important aspect for the change of power and frequency of these events and therefore this index should be taken as a warning signal for future preparedness for more frequent or more powerful events (Harmeling, 2011).

Tabada's confirmation and the warning of the Global Climate Risk Index – the Philippines is ranked high, thus the report can be seen as a warning – illustrate that steps for future preparedness are highly required.

5.3 The consequences of the current climate and the predicted changes

Now the changes of the climate are discussed, we will take a closer look at the consequences of these changes for the Philippines. The conditions of the current climate already have huge impacts in the Philippines. In the period 1991-2010 the country had to deal with 270 extreme weather events, which took yearly an average of 801 lives and caused a damage of US$660 million (Harmeling, 2011). These cyclones are causing for heavy rainfall, flooding, land- and mudslides which will have enormous negative consequences for, among others, the agricultural sector and settlements (Egloso, 2010). So, if the intensity of the extreme weather events are going to increase, and also the frequency of them in the Visayas, then the damage could be worse than mentioned above. If the climate is changing further in the future, then the country has to face new challenges. However, these impacts of the changing climate are

widespread and have different consequences all over the world. These consequences include the following:

Table 5.8: Consequences climate change, globally and for the Philippines

The consequences	Applies to the Philippines?
increase in average global temperature (global warming);	Yes
changes in cloud cover and precipitation particularly over land;	Yes
melting of ice caps and glaciers and reduced snow cover;	No
increases in ocean temperature and ocean acidity;	Yes
reduced crop yields in tropical areas leading to an increased risk of hunger;	Yes
spread of climate-sensitive diseases such as malaria;	Yes
an increased risk of extinction of 20% to 30% of all plant and animal species;	Yes
increased frequency and intensity of extreme events, such as tropical cyclones (including hurricanes and typhoons), floods, droughts and heavy precipitation events;	Yes
less water in many water-scarce regions;	Yes
increased demand for energy for space cooling because of higher summer temperatures.	Yes

Source: Casis, 2008

As you can see, the Philippines is hit by almost all consequences mentioned. Of course, the level of impact differs per consequence. Mentioned in Casis (2008), Greenpeace' report (2005) *Crisis or Opportunity: Climate change impacts and the Philippines*, states that the agriculture and food security will be most affected by climate change in the country. In addition, in areas where rainfall is decreasing and longer drier periods are expected, there will likely be a problem with the water resource. This will in turn affect forestry, agriculture, livelihoods, health and human settlement. In areas where more rainfall is predicted, flooding events are likely to occur or increase (PAGASA, 2011c). The health sector is prone as the spread of diseases are influenced by the climate. These diseases include dengue fever, malaria, and cholera. Other impacts of a changing climate in the Philippines are coral bleaching, fish kills, high mortality of cultured giant clams and red tide. According to others, accelerated rise in sea level will be one of the most visible effects of climate change in the Philippines. This could contaminate groundwater sources and harsh storm surges are likely to occur (Casis, 2008). Many of these consequences have indirect impacts on the tourism sector. The sector depends on food and water sources, coral and marine life as one of the main tourism attractions in the country, many accommodations are built in a short distance of the sea, energy use, and health threat to the tourists.

Conclusion

To conclude this chapter: based on three climate aspects – rainfall, temperature and tropical cyclones – it can be said that the climate in the Philippines is changing and is predicted to continue in the future. Less rainfall, warmer days and more intensive cyclones are projected. The frequency of the cyclones are likely to reduce in Luzon and Mindanao and will slightly increase in the Visayas. Without adapting to the changes, the consequences can be enormous for the nation. Many of the diverse consequences of climate change can have negative impacts in the Philippines and therefore more research in this topic is required and warning signals have already been given to the country to raise awareness and to stimulate investments in their preparedness. The climate and its related disasters can be seen as barriers for economic development, as the disasters are able to destroy or damage many livelihoods.

6. The response of the Filipino government towards climate-related disasters in the Philippines

Now we know that the Philippines is prone to climate-related disasters and that these affect, among others, the health conditions and economic development of the population, it is of importance to research how the government is protecting their people. For that reason this chapter emphasis the following sub-question: *'How does the government safeguard their people and visitors for the (increasing) climate-related disasters?'*

In chapter 1 is mentioned that to reduce the vulnerability towards these climate-related disasters, the resilience of the population must be strengthened. To accomplish this, several actions can be taken, ranging from individual to government actions. This chapter has the emphasis on the government. Yet, here it ranges from national to local.

Remark: due to the lack of a DRR office in Malapascua Island, the information of LGUs used in this chapter is based on San Francisco and Santiago.

6.1 Actions done before a tropical cyclone approaches

Derived from the theory discussed in chapter 1, the main task of the government (all levels) is to inform the population about the conditions and provide them with useful information. This is also the case in the Philippines. Communication is seen as *the* way for disaster risk reduction. The municipalities are still mainly responsible for communicating the information to the barangay captains and officials, at barangay level they are informing the people, including tourists. Making the people aware of the situation and environment they are living in and how to deal with this are the main priorities at barangay level. The awareness will be risen due to (see appendix D):

- distribution of information;
- organizing of meetings and trainings; and
- once a year drills are being held to practice evacuation in different situations, such as earthquake, fires and typhoons.

The municipality of San Francisco is very active in motivating their barangays to be prepared and organizes competitions for them to test which barangay has the best evacuation plan. The winning barangay is awarded by a price. This is stimulating the barangays to invest in their plan (Limosnero, personal communication, May 7, 2013; Tan, personal communication, May 7, 2013). These disaster risk reduction programmes are strengthening the resilience of the population. However, it is not that people are getting physical stronger to respond to the

disaster, it is due to the awareness and knowledge that is spread, that the response is more effective. Nowadays, people are more willing to evacuate. In the past, many people lost their lives, because they thought it was not necessary to evacuate and thus stayed at their house to 'protect' it. Now, people realize that it might be a better option to evacuate and leave things behind. Due to the DRR programmes the mindset of the population has changed and this is what has strengthen the resilience towards climate-related disasters (Balada, personal communication, April 11, 2013).

This active approach of the Filipino government has not always been like this. Before 2010, the actions taken were derived from a centralised government. The Presidential Decree No. 1566 set in 1978, was directed from Manila and had mainly the focus on the impact of the hazard and assumed that disasters cannot be avoided. The centralised government had a reactive approach towards disasters and their actions mainly consists of supporting areas after being hit by a tropical cyclone. This was done by providing relief goods and re-building the damaged infrastructure.

In 2010 a new law was established with the focus on reducing the impacts of a disasters, thus strengthen the local capacity and resilience of the population. The new law, the Republic Act No. 10121, better known as the Philippine Disaster Risk Reduction and Management (DRRDM) Act, was based on a decentralised policy, which gave more power to the LGUs. The awareness of climate change and the need to adapt to the climate-related disasters were main arguments for the Filipino government to switch to a proactive approach towards these disasters and thus to reduce the impacts (Sanchez, personal communication, April 5, 2013). The differences of the two laws are illustrated in Table 6.1.

Table 6.1: Differences between old and new law for disaster management in the Philippines

Paradigm shift	
Presidential Decree No. 1566 of 1978	**DRRM Act of 2010**
Top-down and centralized disaster management	Bottom-up and participatory disaster risk reduction
Disasters as merely a function of physical hazards	Disasters mainly a reflection of people's vulnerability
Focus on disaster response and anticipation	Integrated approach to realize social and human development to reduce disaster risk

Source: Sanchez, personal communication, April 5, 2013

Based on table 6.1 it can be said that three main shifts have taken place. But what do these shifts mean? The first shift, top-down to bottom-up, has been touched upon in previous

paragraph. The shift from centralised disaster management to decentralised gives more freedom to the LGUs to adapt to disasters. This means that local government units can use the local disaster risk reduction fund for training. With the old law, 5% of the budget of a local government would be taken aside in a fund for calamities. However, there were requirements for the government to access this fund. At least 20% of the population and 10% of livelihood must have been affected, but this can only be concluded after the disaster. So whenever governments wanted to prepare themselves and the community, they could not use this fund, because then they would not meet the requirements. The law of 2010 changed this policy. Of the 5% of the fund available for calamities, now 70% is devoted to preparedness and 30% is used for response. So the LGUs have now much more financial capital to invest in disaster risk reduction. This fund is used for:

- mitigation measurements to lessen the impact of disasters towards communities, such as building dikes, early warning systems, or plant mangroves that protect the mainland by reducing the power of waves;
- purchasing of live saving equipment, such as live saving jackets and rescue equipment;
- community training, communication and rehabilitation, such as the DRR programmes

(Balada, personal communication, April 11, 2013; Sanchez, personal communication, April 5, 2013). From the above mentioned activities, it seems that community training and DRR programmes get the most attention. It appears to be the most effective for disaster preparedness. None of the interviewees mention investment in technical measurements. The lack of technical measurements may be the result of the lack of financial capital and knowledge of the systems.

The second and third shift can be combined here as both have the focus on reducing populations' risk to disasters. These shifts mainly contain a switch from a response approach towards a disaster risk reduction approach. The reduction of vulnerability, and strengthen the resilience, is resulting in an increase of human and social development. To accomplish this human and social development, the DRR programmes are emphasizing the spread of knowledge related to the topic. In other words: DRR programmes are providing information that have positive effects on human and social development which is needed to achieve resilience for climate-related disasters.

Concluding from above, it can be said that the actions taken by the Filipino government are emphasizing to strengthen the resilience of the population, by implementing DRR

programmes that are including information for the population to raise their awareness of the risks of their livelihoods. It seems that creating awareness among their people is one of the most important tasks of the LGUs. Apart from this, the LGUs also monitors their region. For example, the barangay is aware of the conditions of all livelihoods: how many people live there? How many animals do they have? From what material is their houses made of? In case of an emergency the barangay knows which livelihood is most prone and thus where to check first. It seems that there are no regulations for building materials in the Philippines. The population is constructing houses based on their preference and financial capital. The more financial capital a family has, the stronger the house will be and the less damage they will witness. However, there is more to discuss to draw a final conclusion of the response of the Filipino government. The response of the government can be divided into before, during and after the disaster. What we have discussed so far has mainly the focus on before the disasters, which makes sense as this is the time to increase the preparedness.

6.2 Actions done during a tropical cyclone

But what kind of actions are taken during and after the disasters? Before we answer this question it is of importance to highlight the different warning signals given by officials as the type of warning signal may require different actions. During research, two different classifications of the signals were found. This is most likely due to the fact that one is derived from the old law, and the other based on the new. The main difference is that the classifications based on the new law, also takes the impact of the amount of rainfall into account, as this was not in the old classification. The following classification is based on the new law, but contains information of the old law as well:

- Storm signal 1.
    - Meteorological conditions: wind speed between 30-60kph and is expected in at least 36 hours. The storm is classified as a tropical cyclone.
    - Impacts of the winds: (banana-)plants and small trees may be damaged or fall over; house of very light materials (nipa and cogon, both materials consisting of leaves and plants) may be unroofed; very light or no damage will be brought to the community.
    - Precautionary measures: be ready to evacuate and inform with your disaster council. It is depending on the amount of rainfall if evacuation is needed. Smaller sea-craft and fishermen are advised not to go to sea because coastal waters can be dangerous.

    - General notes: business as usual may be carried out as long as there is no change in speed of the cyclone. People are advised to stay alert.
- Storm signal 2.
    - Meteorological conditions: wind speed between 60-80kph and is expected in at least 24 hours. The storm is classified as a moderate tropical cyclone.
    - Impacts of the winds: (coconut-)trees may be damages or fall over; few big trees may be uprooted and many banana plants may be destroyed; rice and corn may be damaged; larger numbers of houses with light materials may be affected; few old zinc iron roofs may be roll off.
    - Precautionary measures: everybody is expected to go to the evacuation centres. These places are accommodated by food, water, electricity and clothing. During signal 2, a disaster risk unit will roam around the community and make a public address. The people will be informed with the current position of the typhoon and they should respond to that. People are advised not to travel by air and sea; stay indoors and secure properties.
    - General notes: the latest weather update should be checked frequently. Local disaster preparedness agencies and other organizations are alerted.
- Storm signal 3.
    - Meteorological conditions: wind speed between 80-120kph and is expected in at least 18 hours. The storm is classified as a strong tropical cyclone.
    - Impacts of the winds: the majority of the banana plants are destroyed and many other trees will fall over; rice and corn is heavy damaged; almost all nipa and cogon roofs may be destroyed; light and medium construction may be damaged; widespread disruption of electrical power and communication services is possible.
    - Precautionary measures: everybody is expected to go to the evacuation centres. People are not forced, but they are advised. Often schools are used for evacuation centre and these should not be in landslide, or flood prone areas. Sanitation and hygiene are important for evacuation centres. During signal 3 typhoons the disaster risk unit stays inside.
    - General notes: in both the industrial and agricultural sectors moderate to heavy damage is expected.
- Storm signal 4.

- Meteorological conditions: wind speed more than 120kph and is expected in at least 12 hours. The storm is classified as a very intense typhoon or 'super typhoon'.
- Impacts of the winds: many trees may be fall over, including a total damage to coconut, rice and corn plantations; heavy damage to buildings of mixed constructions; widespread disruption of electrical power and communication services is more likely. Heavy rainfall can cause floods and land- or mudslides.
- Precautionary measures: cancel all outdoor activities and travels and stay in the safety houses or evacuation centres. When signal 4 occurs, just stay put in the evacuation areas and pray.
- General notes: seriously damage is likely to the community. During warning signal 4, no evacuation should be done, it is too late in this phase and should have been done during signal 3

(Balada, personal communication, April 11, 2013).

As you can see, during the four different signals the actions taken by the government has changed (read: precautionary measures): from a mild activity during signal one, to a very active approach during three and four. Let us discuss the activities during a tropical cyclone a bit more in depth.

Again, the main task of the government is communication. They are responsible for informing the vulnerable communities with the latest update related to the approaching tropical cyclone. This is mainly done via radio, television, and telephone communication. Depending on the warning signal, a disaster management team will be active to inform the population. This is done by walking around in the vulnerable areas and informing the people. Unfortunately, the implementation of early warning systems is not common yet. This is mainly due to the fact that it is too expensive for the LGUs. However, whenever such a system is installed, different LGUs will profit from this, as the systems are covering a large area.

The information and warning for such tropical cyclone is derived from different angles. It is often PAGASA that informs the regional DRR office and they are responsible for distributing the information to the vulnerable municipalities. However, this is also part the responsibility of the municipalities themselves. Whenever a warning is given it trickles down to barangay level. Actions taken by the barangay is mainly to ensure that there is an evacuation centre with all necessary equipment and that locals are informed with the status of the tropical cyclone. It is PAGASA that gives the type of warning signal, and it is the responsibility of the

barangays to act on that. It must be mentioned that barangays are not forcing their population to evacuate. Locals always have the choice to ignore the warnings. However, this has resulted in loosing lives. Balada (2013) illustrates that the last 'super typhoon' that hit his region (Typhoon Pablo, December 2012), 8 people lost their lives because they ignored the warnings of the officials. He is convinced that when they would have listened, they would not have lost their lives.

A matter of fact, all officials and locals used for this research believe that DRR programmes have made an important decrease in damage. According to them, DRR programmes made the population aware of the risks and with that made them believe in the advice of the government. The latter is in interesting switch, because many Filipinos do not have many faith in their government (see: regional framework). Thus, due to the distributed information of DRR, the Filipinos created more understanding for the actions done by the government and perhaps a start has been made in trusting the government again (Balada, personal communication, April 11, 2013; Limosnero, personal communication, May 7, 2013; Sanchez, personal communication, April 5, 2013; Tan, personal communication, May 7, 2013).

6.3 Actions done after a tropical cyclone

Finally, after a tropical cyclone has hit an area, it is depending on the damage which level of government is active. If a small area is damaged, the municipality is responsible for monitoring the damage and distributing the information to the higher governmental levels. If a bigger area is hit, the provincial or even regional office is becoming active. Or when a municipality cannot provide the help that is needed in the area, higher governmental officials support the municipality (Balada, personal communication, April 11, 2013; Sanchez, personal communication, April 5, 2013).

Conclusion

Concluding this chapter, it can be said that since 2010 the government of the Philippines has been more active in the field for safeguarding their population and visitors by increasing their resilience to climate-related disasters. Officials confirm that less damage is brought, but statistics to confirm this are lacking. Due to the fact that this new strategy only has been implemented 3 years ago, statistics and the effect on the long-term cannot be given. Officials and locals may now be positive, but the effectiveness of DRR programmes on the long-term is still unknown. For now, it can be said that progress is made. Locals are satisfied with the actions taken by the government and are more aware of the risks of their habitat.

However, a very important question remains unanswered: applies this conclusion for the entire Philippines? My conclusion is no. Knowingly, two areas with different approaches are chosen for this research to make a comparison. The municipality of San Francisco is awarded by the UN for their DRR plans. The other research area, Malapascua Island, results in the opposite. Here, no DRR office is located. Locals of Malapascua Island never heard of this office before and were not aware of actions done by the government. This is solely the result of an inadequate local government. Mentioned in the regional framework, the current mayor of Daanbantayan refuses to invest in any matter that concerns Malapascua Island, as the mayor did not receive a majority of votes on this island. Perhaps in future changes may be made, because the new mayor has won the last elections in Malapascua Island. Here, it is obvious that the locals do not trust the local government at all and perhaps, whenever DRR programmes may be implemented, it takes longer for the population of Malapascua Island to listen to warnings given by the government.

So, whether to conclude which, and if, actions are taken to safeguard the population and its visitors varies per municipality and barangay. This chapter contains information of a perhaps more idealistic municipality and barangay and applies not for the entire country. If this is realistic situation in the Philippines cannot be said as only two contradicting areas are used for research.

Though, it can be said that with the switch from a reactive to a proactive approach, the mindset of officials and locals have been changed and until now, the new law has made a positive contribution in safeguarding the people.

7. The response of tourism towards climate-related disasters in the Philippines

This chapter is dedicated to discuss the final sub-question of this research: '*how do tourism businesses safeguard tourists and local communities for the (increasing) climate-related disasters?'*

Here, you can find information about how the private businesses involved in tourism respond towards climate-related disasters in the country. For this chapter two tourism destination in Cebu province are chosen that are prone to these disasters: Camotes Islands and Malapascua Island. Following paragraphs are first discussing the responses per research area, thereafter a comparison will be made.

7.1 Santiago Bay, Camotes Island

Of the 11 accommodations established in Santiago Bay, 5 have been interviewed and used for this research. These accommodations are: Aizawa Beach Resort and Restaurant, Dory's Homestay, Ethyl Homestay, Santiago Bay Garden Resort and The Swiss Lagoon. Of other accommodations the owner or manager was not present and other employees were not aware of the accommodations' approach of dealing with climate-related disasters.

Preparations starts before a tropical cyclone is coming. Aizawa Beach Resort and Restaurant just opened beginning of this year, and therefore has not experienced any cyclone yet. However is aware of the possibility of such an event. The awareness of a cyclone among the employees, and tourists, starts by the proactive approach of the barangay by informing all its people of the coming cyclone. Then, the employees inform the tourists with the latest news and developments and advise them to stay in and wait until it is over (Ornopia, personal communication, May 5, 2013). Another accommodation that opened only recently (February, 2013), has a slightly similar approach. The owner of the Swiss Lagoon is still new to the area and is less aware of the economic impact of tourism, and also not yet aware of the typhoon season, but she is also aware of the proactive approach of the barangay when such a cyclone is approaching. In addition, she also has food, water, lights, petroleum, medicines etc. in stock in her restaurant and her home, however it not became clear if this is a preparation for the possible cyclone (Rey, personal communication, May 5, 2013). Ethyl Homestay is a small scale accommodation also only opened this year. This is one of the few accommodation of which part of the buildings are made of wood, or bamboo, this in contrast with the majority of the accommodations that consist of concrete buildings. It is depending on the warnings of the barangay regarding the power of the cyclone, but if necessary, this homestay will send their

guests to the barangay hall, or another designated location by the barangay as evacuation centre. Just like the other accommodations, they inform their guests on time with the coming situation (Employee Ethyl Homestay, personal communication, May 5, 2013). The neighbour of Ethyl Homestay is Dory's Homestay, which is a family run business. The woman in charge is part of the barangay DRRMC and therefore has a lot of knowledge about the tropical cyclone conditions in Santiago and Camotes Island in general. This information is used in previous chapter, but it is worth mentioning here as she is the owner of one of the accommodations as well and therefore is aware of how to deal with a coming cyclone and how to inform her guests, which is actually similar to the approaches of the other accommodations mentioned here (Limosnero, personal communication, May 7, 2013).

So it can be said that the accommodations are active in informing their guests about bad weather, but do they also inform the local population? All of the interviewees agreed that the barangay is responsible for this and that the barangay has a proactive approach here. Rey illustrates this by explaining that the barangay informed her about the possible weather conditions in the area when she moved to Santiago. Furthermore, all the owners are aware of the barangay DRRMC and their projects (Employee Ethyl Homestay, personal communication, May 5, 2013; Heino, personal communication, May 5, 2013; Limosnero, personal communication, May 7, 2013; Ornopia, personal communication, May 5, 2013; Rey, personal communication, May 5, 2013).

Although the damage is mainly to the beach, all interviewees agreed upon advising their guests to stay inside during a tropical cyclone. It is very rare in Camotes that buildings are damaged, or trees are falling. So for the safety of the tourists no burden is witnessed, but for their protection they are advised not to go out during a tropical cyclone. Tropical cyclones in Camotes are mainly expressing themselves throughout strong wind. Floods and heavy rainfall is rare. (Employee Ethyl Homestay, personal communication, May 5, 2013; Heino, personal communication, May 5, 2013; Limosnero, personal communication, May 7, 2013; Ornopia, personal communication, May 5, 2013; Rey, personal communication, May 5, 2013).

It seems that the interviewees were quite unanimous as they all stated that after the cyclone everybody continues with their activities and that hardly any damage is brought to Camotes. In some areas it is necessary to clean up the beaches, but this is part the responsibility of the accommodations (Employee Ethyl Homestay, personal communication, May 5, 2013; Heino,

personal communication, May 5, 2013; Limosnero, personal communication, May 7, 2013; Ornopia, personal communication, May 5, 2013; Rey, personal communication, May 5, 2013).

Discussing the preparedness to and damage of tropical cyclones in Santiago, Camotes Island, it seems that locals and tourists are safeguarded by the proactive approach of the municipality and the barangay, discussed in previous chapter. But what about the future? Some of the accommodations wonder if they are well prepared enough. They are able to deal with typhoon warning 1 and 2, but do not know what the consequences are when a stronger typhoon will approach the island. There is no evacuation plan established by the private businesses, but the barangay is well prepared and that is where they depend upon. They arrange evacuation centres and guide the people and tourists if needed. The municipality organize competitions for the barangays in practising their evacuation. With that the barangays are motivated to practise and will be awarded for their effort. Other accommodations have no idea how to handle a stronger cyclone than experienced so far and likely they will pray during such a strong event. One of the interviewees stated that during stronger typhoons windows could damage, small or light objects could fly around and trees could fall down, however spoke very lightly about the topic without any worries (Employee Ethyl Homestay, personal communication, May 5, 2013; Heino, personal communication, May 5, 2013; Limosnero, personal communication, May 7, 2013; Ornopia, personal communication, May 5, 2013; Rey, personal communication, May 5, 2013).

Thus, what actions are taken by the tourism sector of Santiago? Besides informing their guests when warning is given by the barangay, no initiative is shown by the private sector. the entire tourism sector of Santiago is protected by the proactive approach of the municipality and barangay and likely therefore do not feel the need to adapt a proactive approach itself.

7.2 Malapascua Island

The second research area for this study is Malapascua Island. As you have read in previous chapter, there is a lack of government involvement in the development of this island which is quite contradictory with the situation in Camotes Island. All the more reason to compare the results of both research areas, but first let us discuss the approach of the tourism sector of Malapascua Island.

In Malapascua Island the accommodations pop up like daisies. The first one was established in 1992 and from that moment on the amount of accommodations has been increasing ever since. Some of them are quite hidden or no sign is given to locate them. Nowadays, about 43 accommodations are estimated on the island. These diverse from luxurious resorts to simple lodging houses. This study has focused on the accommodations closest to the sea as these are the first to hit and therefore the most prone to tropical cyclones. Of the about 10 accommodations located at the beach, 6 were able to cooperate in this research. These include: Blue Corals, Sea Explorers Dive Shop (part of Ocean Vida Beach and Dive Resort), Kokay's maldito Dive Resort, Exotic Dive and Beach Resort, Mike & Diose's Beach Cottage and White Sands Bungalows.

Before a tropical cyclones arrives, the private sector on Malapascua Island performs several actions. Not all, but several accommodations, especially those with dive shop included, check the weather forecast every day. Weather is an important factor for safe diving, for that reason they feel the responsibility to check this daily. Martin, manager of the dive shop related to Ocean Vida, is one of the people that check the forecast daily and is up to date about the weather conditions on the island. Last year, according to Martin, about 23 tropical cyclones were predicted to hit the island, but an estimated 18 really made landfall. The majority of them were active in the months June-September, however some have occurred in November-December, which is normally not typhoon-season. He adds that it is probably more dangerous if a cyclone with low power approaches Malapascua directly, than a strong one which is further away and the island is hit by the tail of the event.

Three different weather websites are checked daily by the manager: www.typhoon2000.ph, www.meteoprog.ua, and www.windfinder.com. The first one gives accurate information about existing or arising typhoons, the second for wind speed and directions, and the third about wind directions and rainfall. Especially typhoon2000.ph provides information about tropical cyclones for the upcoming days. When a tropical cyclone is approaching the island, people move their boats to the 'typhoon shelter' area. During a cyclone wind always comes from the same side, the shelter area is where the wind will not hit the boats (unless the island is hit by the eye of the cyclone, then the wind is coming from different directions) (Martin, personal communication, May 25, 2013).

So the boats are put in safety areas, but what about the tourists? The majority of the interviewees state that the tourists are informed if such event is going to happen. However, not all accommodations are as active as they could be. One interviewee mentioned that most

tourists check themselves. That most of them have a Smartphone or computer with them to check it. Other interviewees mention that they have an announcement board where the tourists are informed by the bad weather conditions. Some even advise the tourists to go to the mainland if that is still possible (De Dios, personal communication, May 24, 2013; Micua, personal communication, May 24, 2013; Mischo, personal communication, May 25, 2013). However, the results of observation must be mentioned here. During research bad weather was approaching the island. Nothing strong like a typhoon, but high waves, strong wind and heavy rainfall were present. I was not informed by anybody about the conditions. Information if it was a light storm, or the beginning of a stronger cyclone was not given. A stranger in a typhoon prone area does not have the knowledge to estimate this. After the strongest part of the storm finished, information was given that it was a light storm and would last for about an hour. I just had to wait.

For informing the local communities or others in general, the approach of accommodations is divided. All interviewees state to inform their employees, which are mainly locals. In practice, the news will spread the island in less than half an hour. Due to the lack of involvement of the government to inform locals for the upcoming bad weather, locals are depending on the findings of the private sector, because not all locals have access to radio, television or internet and do rely and act on their findings. However, it also seemed to be a competition between accommodations to who finds out the first, who responds the first and what kind of response. They work individually and do not share information on a regular bases. Information is shared with friends, family and employees, but further sense of responsibility to inform others or cooperation is not present.

One final remark about the preparedness for the private sector as well of the local communities: nobody of the interviewees ever heard of a disaster risk reduction office located on the island. Some do not even know what disaster risk reduction contains (De Dios, personal communication, May 24, 2013; Martin, personal communication, May 25, 2013; Micua, personal communication, May 24, 2013; Mischo, personal communication, May 25, 2013; Wieland, personal communication, May 23, 2013).

During a tropical cyclone, which can last for hours, some accommodations are advising their guests to stay inside, others are leaving the decision up to the tourists themselves. Many guests avoid swimming due to the high waves, but that is up to the people themselves. '*There is no need to inform the guests, their decisions are based on common sense'*. The damage that

is brought to the island is mainly to the boats. The last strong cyclone, Pablo December 2012, made about 15 boats sank. Furthermore, during some events the water of the sea is rising, but the first 20 meters of the shore are used as flooding areas and therefore building there is not allowed. More flooding area is not needed because the surrounding islands are protecting Malapascua for big waves. In the current condition, waves do not have the time and space to enlarge themselves to huge once that could bring enormous damage. The impacts for the tourists are mainly noticeable if their daily trip has been cancelled. This happened 5 to 10 times last year, but most people understand (De Dios, personal communication, May 24, 2013; Employee White Sands Bungalows, personal communication, May 24, 2013; Mischo, personal communication, May 25, 2013).

After the tropical cyclone everybody continues with their daily activity. The boat captains/owners will analyze the damage and clean up what has to be cleaned up. The tourists continue their holiday (Micua, personal communication, May 24, 2013).

So what about the future? All interviewees involved state that there is a change in climate, mainly the months a tropical cyclone occurs. A change in power or frequency is not mentioned by any of them, but this must be monitored in a bigger period of time. Of course it is hard to predict the future, and therefore the interviewees respond more reserved. Some believe more consideration and preparedness is needed, others believe the current preparedness is adequate for future events and again others do not know. All of them believe that the future cyclones will not bring other damage than the past have brought, which is of course one of the possible scenarios. A initiative is taken by one of the owners for better preparedness, however did not succeed likely due to the lack of priority. The island is coping with more difficulties that are of higher priority. For example, the lack of a proper port and lack of waste management. These are more issues that are of daily frequency and therefore receive priority (De Dios, personal communication, May 24, 2013; Martin, personal communication, May 25, 2013; Micua, personal communication, May 24, 2013; Mischo, personal communication, May 25, 2013; Wieland, personal communication, May 23, 2013).

7.3 The comparison

Now the approaches and actions taken by the two different tourism destinations are known, it is interesting to compare the two. This is summarized in the following table:

Table 7.1: Comparison of actions taken by Santiago and Malapascua Island

Actions taken during:	Santiago	Malapascua Island
before tropical cyclone	No initiative by the tourism businesses is shown for better preparedness for tropical cyclones. On short notice before a cyclone is approaching the barangay informs the owners of the businesses and they inform the tourists. The businesses do not actively inform the local population. This is seen as a responsibility for the barangay.	Tourism businesses show little initiative for safeguarding their guests and the local population. - The weather forecast is checked daily. - Boats are brought to the 'typhoon shelter'. - Guests are informed in a passive way. Businesses do not approach their guests with the information. The information will be written on a board and it is the responsibility of the guests to read the board. - Information is shared with employees, friends and families.
during tropical cyclone	No initiative by the tourism businesses is shown. The businesses and tourists are solely depending on the actions of the barangay. Tourists are advised to stay inside.	No initiative by the tourism businesses is shown. Tourists make their own decision how to act during a tropical cyclone. This is based on common sense.
after tropical cyclone	Tourism businesses are partly responsible for cleaning the beach. Until now, no real damage is brought to the tourists and therefore no action after such cyclone is currently required. Tourists continue with their holiday.	Until now, no real damage is brought to the tourists and therefore no action after such cyclone is currently required. Tourists continue with their holiday.

Two main differences in approaches can be seen in the table above. First, before the tropical cyclone, tourism businesses of Santiago do not show any action and solely being guided by the actions done by the barangay. This in contrast with Malapascua island, where no barangay is active in this field and therefore little initiative is shown. Does this means that due to the fact that the barangay is active in the field of DRR, the private sector does not feel the need to be active? It seems so. Because the barangay of Santiago is proactive in the field, the population, including owners of businesses, are informed throughout the year and therefore receive adequate information. It seems that all actions and guidelines are already taken by the government. So, due to the proactive approach of the barangay, tourism businesses have the required information, know where the evacuation centres are and know what steps to be taken when needed. So why would they take any action? Maybe in the case of Santiago the businesses do not need to take any action.

This does not apply for Malapascua Island. Here, no government officials is active in the field of DRR and therefore the businesses are depending on their own actions. This results in a lack of guidelines and an evacuation plan. The actions done on Malapascua Island are based on common sense. This brings us to the second difference in approach. The decisions made on Malapascua Island, the businesses as well as the tourists, are based on common sense. However, this is very subjective. Common sense for one person does not mean the same as for another. Especially when we talk about the tourists. It is very likely that tourists are in a different environment with a different climate than their normal lives. So how would they know how to act? Therefore it is advised to inform the tourists with the situation and that they will be guided by local knowledge, of people that know the situation and the risks.

Conclusion

This chapter has compared the responses of two tourism destinations in Cebu province. Santiago has a very active government when it comes to DRR management, Malapascua Island has no government when it comes to DRR management. This results in a lack of initiatives in Santiago and little initiative on Malapascua Island. Based on this fact, a conclusion can be made that it very depends on the government involvement whether the tourism sector is active or not in DRR management and therefore no general conclusion can be given about the response of tourism businesses towards climate-related disasters. This cannot be answered based on this research. Apparently this varies per destination.

It must be mentioned that in the past no real damage is brought to the tourists and is seems that DRR management in the tourism sector is not of high priority. Especially in Malapascua Island this became clear as they are coping with other problems daily, such as waste management and a lack of a proper port. This brings us to the question touched upon in the methodological framework: how important is it for the tourism sector to increase their preparedness? Based on this research it can be concluded that the tourism sector in the both research areas, particularly Malapascua Island, have other priorities and therefore do not feel the need to take a proactive approach. Besides, until now there have been no situation that was unmanageable with the current approach, so it is understandable that the tourism sector does not feel the pressure to change this.

Conclusion

This research has been conducted to assess the actions taken by the tourism sector to prepare for climate-related disasters in the Philippines. The results of this research show that the tourism is growing and the impact is increasing slowly and steadily. Tourism development has been a priority for the government, especially in the Visayas. With this, the government is trying to reduce the poverty rate, which is still about 25% in the Philippines. For this research two different areas are chosen: Malapascua Island and Santiago. Both destinations profit from this sector. Both used to be fishing villages, but due to the development of tourism the economy has become more diverse. Besides jobs generated directly by tourism, the destinations also benefit indirectly.

Unfortunately there is also a barrier for tourism development and development in general, in the Philippines: climate (change) and the related disasters. Due to the increase of tourism, more locals are depending on this sector. However, when a climate-related disaster hits a tourism destination, it is likely that damage will be brought to the economy. When real damage is brought to the infrastructure and buildings, tourists will not visit the area for a certain amount of time. The owner, employees, guides and farmers will experience a decrease in income due to the disaster. For that reason, it is of high importance to protect the sector from disasters, so that income generated directly and indirectly from tourism can be maintained.

Those climate-related disasters are not derived simply by climate change. The disasters are part of the current climate and have always been a barrier for development in the Philippines. However, the country is also coping with climate change. Based on three climate aspects – rainfall, temperature and tropical cyclones – it can be said that the climate in the Philippines is changing and is predicted to continue in the future. Less rainfall, warmer weather and more intensive cyclones are projected to occur. The frequency of the cyclones is likely to reduce in Luzon and Mindanao but likely to slightly increase in the Visayas. Without adapting to the changes, the consequences can be enormous for the nation. Many of the diverse consequences of climate change can have negative impact in the Philippines.

So what can they do? The Philippines would like to continue with tourism development, but also has to face the threats of climate-related disasters. Therefore it needs to adapt to these disasters. This research has divided the activities done by the government and by the tourism sector. The government of the Philippines seems to be aware of adapting to the climate. Since 2010, they are implementing a new law, which focuses on disaster risk reduction, to safeguard their people. Officials confirm that due to the DRR programmes less damage is brought, but

statistics to confirm this are lacking. Officials and locals may now be positive, but the effectiveness of DRR programmes on the long-term is still unknown. For now, it can be said that progress is made. Locals are satisfied with the actions taken by the government and are more aware of the risks of their habitat. A very important part of the DRR programmes is raising awareness among the people, which is done by communication. Locals are informed with the circumstances in their livelihood, and trainings are given to strengthen their resilience. This is done before any tropical cyclone approaches. During a cyclone, the government warns the population, mainly by television, radio or telephones. Depending on the warning signal, a DRR team helps the population to prepare or evacuate.

The tourism sector has still a reactive approach when it comes to preparedness for disasters. This research shows that both tourism destinations are only making small efforts to prepare. Resulting from this study three conclusions can be made:

- The actions taken by the tourism sector are dependent on the actions taken by the LGUs. Resulting from this research, it shows that in Santiago, where the government is proactive in the field of DRR management, the tourism sector has a reactive approach. This is in contrast with the second research area, Malapascua Island, where no DRR programmes are implemented and where the tourism sector shows little action towards preparedness. Based on this fact, it can be concluded that it depends on the government involvement whether the tourism sector is active or not in DRR management;
- LGUs emphasize DRR programmes and with this the focus on early warning signals and other technical solutions lack attention. None of the interviewees mentioned that the government is implementing such technical measurements. It is very likely that no attention is given to these aspects due to the lack of financial capital of the LGUs; and
- It seems that the tourism sector has other priorities at the moment. Especially in Malapascua Island, the businesses are coping with other problems, such as waste management and the lack of a proper port. These are more pressing issues that they have to confront daily. Therefore, the preparedness for disasters receives less attention as this occurs only a couple times a year and until now, no real damage is brought to the tourists or the sector.

It must be mentioned that no general statements can be made for the entire Philippines on the subject of disaster preparedness. This research has included two areas with different approaches of the government and therefore the actions taken by the tourism sector varies as

well. Though, it can be said that with the switch from a reactive to a proactive approach, the mindset of officials and locals have been changed and until now, the new law has made a positive contribution in safeguarding the people.

Based on this research it can be recommended that the results of the DRR programmes should be implemented in the entire country and should also be well monitored. Thereafter, conclusions can be made about the contribution of DRR programmes. The plans of the LGUs should be known in the tourism sector. Only then is the sector able to effectively implement disaster-preparedness in their management and operations. There are still many opportunities for the sector to adapt to a proactive approach, especially in the communication towards the tourists. However, it must be mentioned that if the other more pressing, daily issues that are barriers for development are not solved, disaster-preparedness will remain a low priority.

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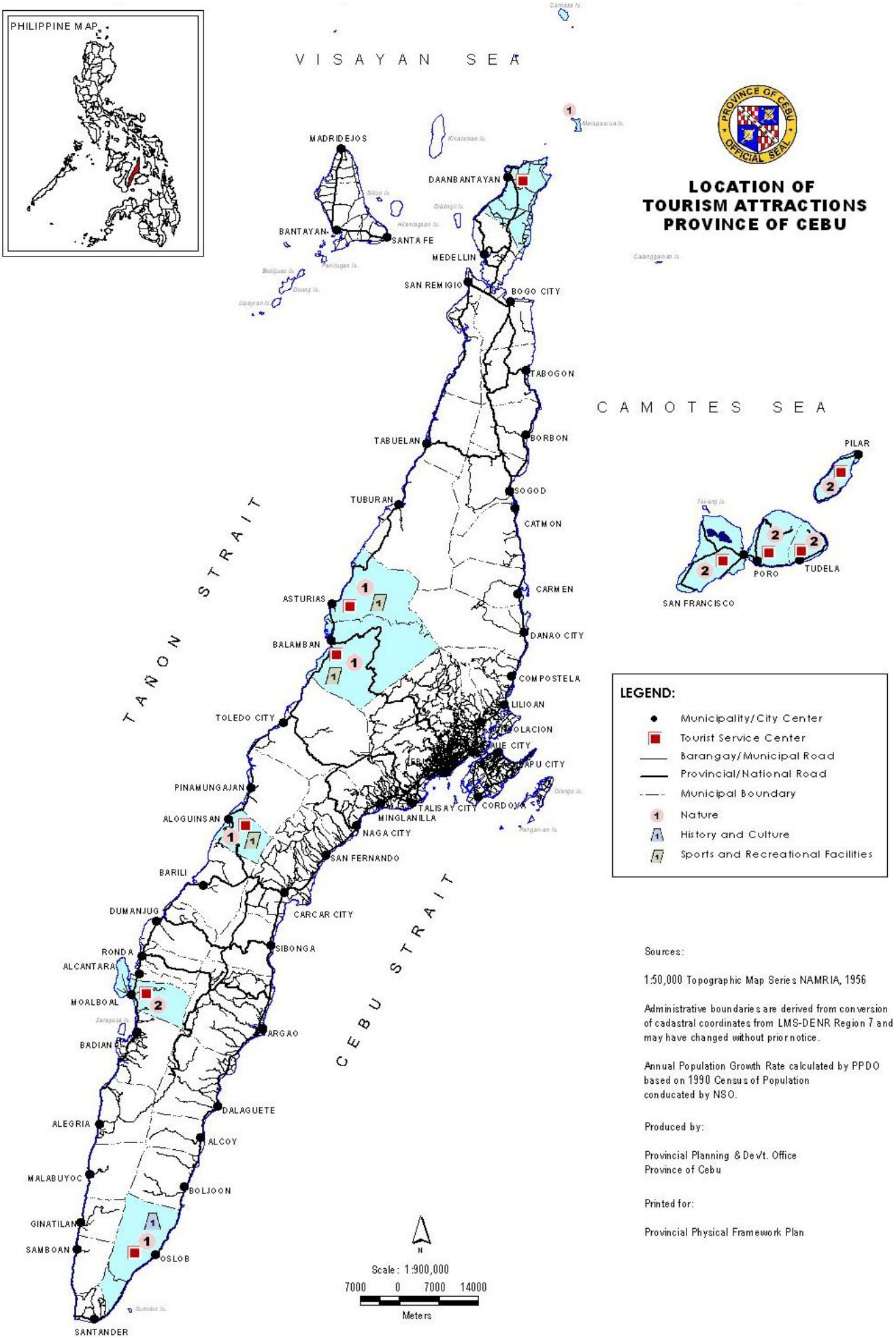
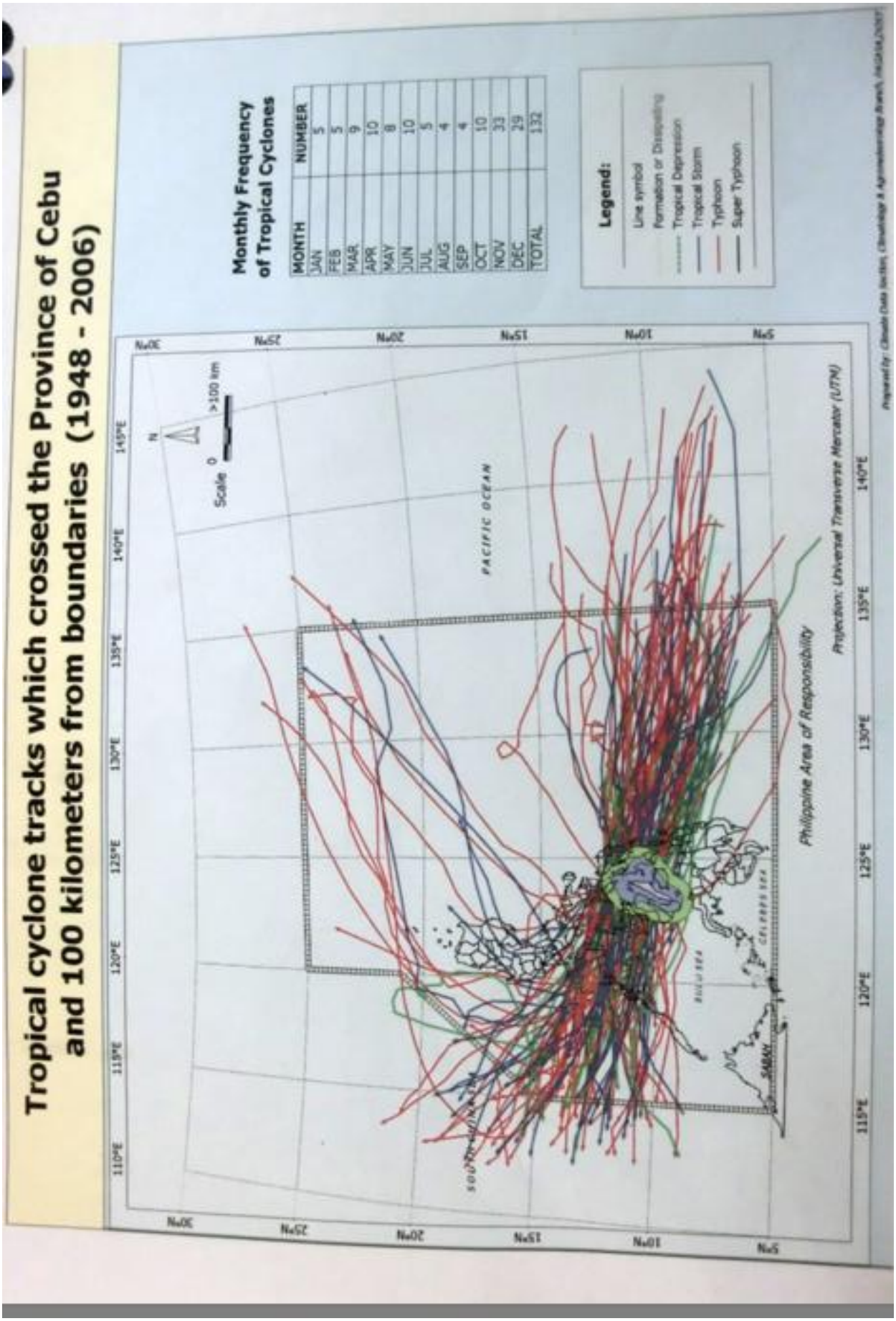
Appendices

Appendix A: The Philippines in regions

Appendix B: Tourism attractions in province of Cebu



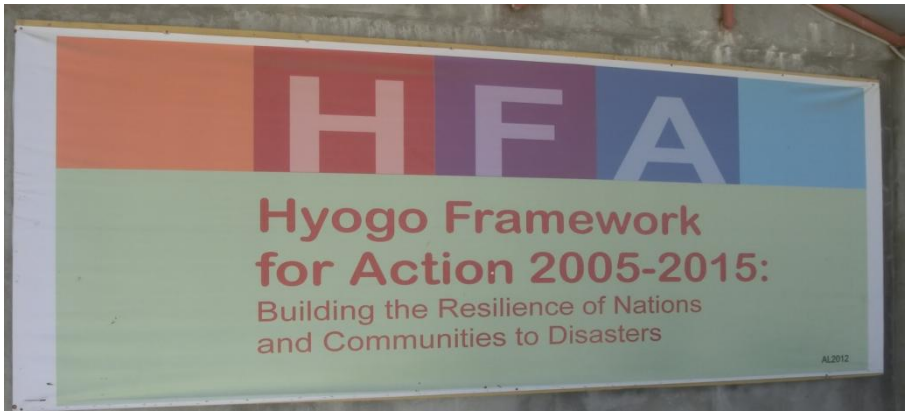
Appendix C: Tracks of tropical cyclones in the Province of Cebu



Appendix D: Tools used for informing and training the population

Information board located in the center of barangay Santiago

Announced activities for increasing resilience, municipality of San Francisco




step UP
Disaster Risk Reduction
MUNICIPALITY OF SAN FRANCISCO
celebrates
INTERNATIONAL DAY FOR DISASTER REDUCTION
October 13, 2012
Theme 2012 "Women and Girls: the Visible Force of Resilience"
POLENTA

Appendix E: List of interviewees

Name	*Department/function*	*Date of interview*
Balaba, Verneil	Office of Civil Defense (OCD) / Regional coordinator operations	April 11, 2013
De Dios, Sonia	Temporary manager Blue Corals, Malapascua Island	May 24, 2013
Employee Ethyl Homestay	Employee Ethyl Homestay, Santiago Bay, Camotes	May 5, 2013
Employee White Sands Bungalows	Employee White Sands Bungalows, Malapascua Island	May 24, 2013
Guantero, Melissa	National Economic and Development Authority (NEDA)	April 10, 2013
Heino	Manager Santiago Bay Garden Resort, Santiago Bay, Camotes	May 5, 2013
Limosnero, Jeanie	Owner Dory's Guesthouse, Santiago Bay, Camotes and member of the Barangay DRRMC, Santiago Bay, Camotes	May 7, 2013
Martin	Manager Sea Explorers Dive Shop, Malapascua Island	May 25, 2013
Micua, Onjay	Manager Dive Shop Kokay's Maldito Dive Resort, Malapascua Island	May 24, 2013
Mischo, Oliver	Marketing manager, Exotic Dive and Beach Resort, Malapascua Island	May 25, 2013
Montecillo, Rowena	Department of Tourism (DOT) / Regional Director	April 4, 2013
Ornopia, Myrna	Owner of Aizawa Beach resort, Santiago Bay, Camotes	May 5, 2013
Rey, Pamela	Owner of Swiss Lagoon Restaurant and Hotel, Santiago Bay, Camotes	May 5, 2013
Sanchez, Neil	Provincial Risk Reduction and Management Council (PDRRMC) of Cebu /	April 5, 2013

	Provincial Director	
Tabada, Oskar	PAGASA / Regional Director for Visayas	April 25, 2013
Tan, Monica	Local Disaster Risk Reduction and Management Office Camotes/ planning Assistant	May 7, 2013
Wieland, Mike	Mike & Diose's Beach Cottage, Malapascua Island	May 23, 2013

Appendix F: Semi-structured interviews with the tourism sector

1. Could you introduce the organization and yourself within the organization?
    - Objectives, mission, vision of the organization
    - Characteristics of organization: number of rooms, employees, open since when, products available, tour available, local owner
    - Your function in organization
    - How many years
2. To what extend are the locals benefiting tourism in Santiago/Malapascua?
    - Economic development
    - Human development, skills, etc.
    - How would the destination be without tourism
3. Are natural disasters common?
    - When, which months
    - Which disaster and characteristics of disaster. Wind, rain, floods, etc.
    - Frequency and power
    - Impacts
4. Are the disasters a threat for tourism development?
    - Consequences
    - Past events
    - Tourists in danger
5. How does your organization deals with these disasters?
    - Preparedness, evacuation plan
    - Communication to tourists and employees
    - Communication to local community
6. Could you explain step by step what the organization does when a tropical cyclone is approaching?
    - Before
    - During
    - After
7. PAGASA: 'climate is changing'. Do you feel any need for changing your policies towards disasters in future?
    - Increase in frequency
    - Increase in power

Appendix G: semi-structured interviews with governmental institutions

Interview with NEDA:

1. What is NEDA doing?
    - Activities
    - National, regional or local involvement
2. What are the most important economic sectors?
    - Trends
    - Current economic situation
3. Does tourism contribute to economic development? If yes, how?
    - Statistics
    - Poverty reduction
    - Human development
    - Benefits for local population
4. Are natural disasters barriers for development?
    - Disaster management into account for policy making
    - How to deal with them

Interview with Office of Civil Defense and Provincial Risk Reduction and Management Council:

1. Could you introduce yourself and the organization?
    - Objectives, mission, vision
    - National, regional, local
    - Activities
    - Your function
2. Could you tell me more about climate-related disasters in your area?
    - Which disaster
    - How many
    - When
    - The impact, damage
    - Most vulnerable area
3. What kind of measurements are taken by your organization to safeguard the people?

4. How do you reduce the risk to disasters?
    - Communication
    - Trainings
5. Do you notice any climate change in your area?
    - What changes

Interview with PAGASA:

1. Could you introduce yourself and the organization?
    - Objectives, mission, vision
    - National, regional, local
    - Activities
    - Your function
2. What are the characteristics of the climate of the Philippines?
    - Rain, wind, temperature, disasters, etc
3. Why is the Philippines prone to climate-related disasters?
    - Location
4. Is there climate change? If yes, what is changing?
    - Most vulnerable areas
    - Danger to population
    - Danger to tourism
5. How should be responded to climate change? How should the Philippines adapt?
    - Adaptation strategies
    - Early warning signals
    - Communication and training
    - displacement

Interview with DRR office San Francisco and Santiago:

1. Could you introduce yourself and the organization?
    - Objectives, mission, vision
    - National, regional, local
    - Activities
    - Your function
2. Why is the office introduced?
    - Necessary

    - Since when active
3. Could you tell me more about climate-related disasters in your area?
    - Which disaster
    - How many
    - When
    - The impact, damage
    - Most vulnerable area
4. How is DRR implemented?
    - Trainings
    - Programmes
    - Awareness raising
5. How is it communicated?
    - To locals
    - To tourists
6. Is there any reduction in damage noticeable?
7. Could you explain step by step what the organization does when a tropical cyclone is approaching?
    - Before
    - During
    - After