Climate Change and the Tourism Sector in the Mekong Delta of Vietnam: A Critical Review

Van Da Huynh

School of Social Sciences and Humanities, Can Tho University, Vietnam
E-mail: hvda@ctu.edu.vn

Abstract

Mekong Delta Region of Vietnam is forecasted to have one of world's most severe impacts from climate change. There is a significant knowledge gap in research on climate change impacts on tourism in this area. While climate change's impacts on agriculture and fisheries have received much attention from authorities and researchers, impacts on tourism have largely been ignored. This article reviews the evidence for climate change in the Mekong Delta and its connection to the tourism sector. Firstly, the study lays out quantitative data for climate change in the Mekong Delta. Secondly, the detailed characteristics of the tourism sector in the Mekong Delta are introduced, including tourism resources, tourism incomes, flow of tourists and tourism facilities. The significant connection between these two components is established as a setting context for further study of climate change-tourism relation in the region.

Keywords**:** *Climate change, Tourism, Mekong Delta*

1. Introduction

This paper, primarily based on desk-based research and secondary data, will provide an overview of the Mekong Delta's climate change data and explore the connections between tourism development and climate change in the region. The outcomes show that the tourism sector in the Mekong Delta of Vietnam would suffer from five principal threats including: sea level rise, salinity intrusion, temperature variation, irregular rainfall and storms. The most critical threat is the sea level rise and tourism climate change concerns in the Mekong Delta remains a big problem due to a lack of strategic planning.

2. Climate change in the Mekong Delta of Vietnam

Climate records for the Delta show that climate change is happening at a pace of change that is increasing (ICEM, 2009). Several studies by research institutions and the Mekong Delta provinces (ICEM, 2009; Ministry of Natural Resources and Environment, 2008, 2016; Oranop-na-Ayuthaya, 2015; Tran, 2012, 2017) indicate climate change in recent decades consists of rising temperatures, increasing rainfall, salt water intrusion further inland and most importantly, sea level rise. Also, more extreme weather events have been recorded.

According to the Ministry of Natural Resources and Environment (2016) the average temperature across the whole of the Mekong Delta area has been increasing in recent decades at all observational stations. The yearly average temperature from 1958 to 2014 increased by 0.5^0C with an average trend of 0.1^0C/decade (Ministry of Natural Resources and Environment, 2016, p. 32; Tran, 2017) (See Figure 1). With the RCP8.5 scenario, in the mid-21st century the temperature will likely increase by 1.8-1.9^{0}C and at the end of the century the temperature will likely increase by 3.0-3.5^{0}C compared to the baseline period 1986-2005 (Ministry of Natural Resources and Environment, 2016).

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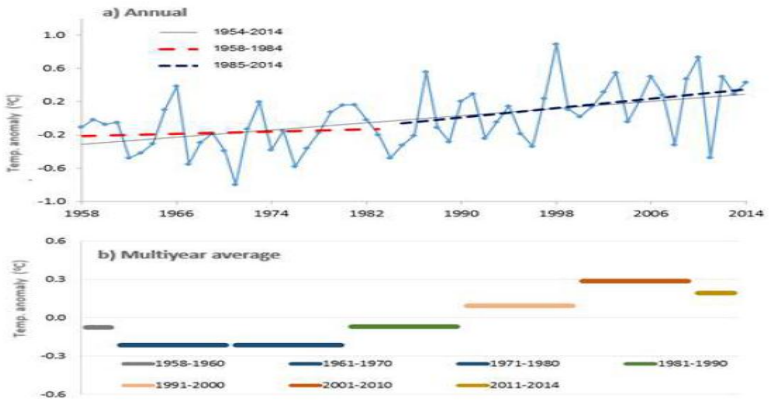

Figure 1 Annual and inter-annual anomalies of temperature (^{0}C) in Vietnam
Source: Ministry of Natural Resources and Environment (2016)

In terms of changes in rainfall, recently collected data shows that rainfall intensity has increased, even in areas where total rainfall has decreased (Tran, 2012). It has been forecasted that by the 2030s the rainy season will start later and rainfall will decrease by 20% compared to 1980 (See Figure 2). The rainfall scenario also predicts that more extreme rainfall will occur in the region.

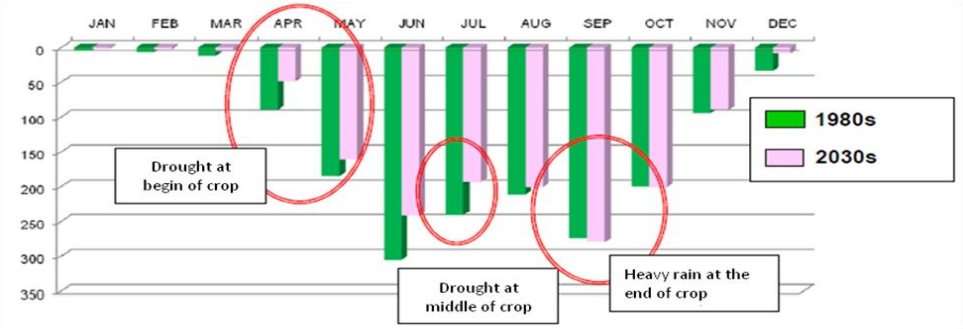

Figure 2 Expectation of rainfall change ịn Vietnam from 1980s to 2030s
Source: Adapted from Doan (2009, p. 4)

As far as the threat of saline intrusion is concerned, scientific studies predict that sea level rise would cause an enormous influx of salinity for the main stream of the Mekong River. It is projected that sea water may travel 90 km upstream from the coastline in to the mainland. An area of salinity of 4g/liter (highly saline) could cover 71% of the whole Delta in a scenario of 100 cm sea level rise (See Figure 3).
As shown in Figure 3, at the moment, around 20% of the delta is impacted by 4g/l salinity. The proportion will increase to about 45%, 55% and 60% with 50cm, 70cm and 100cm sea level rise scenarios, respectively. As agricultural economies are relying on fresh water (e.g., rice paddies) the water intrusion predicted in this sea level rise scenario would cause enormous challenges for the regional economy, reducing agricultural productivity. The salinity intrusion will decrease significantly the amount of land for fresh water agriculture. According to the Ministry of Natural Resources and Environment (2010), in 100cm sea level rise scenario, nearly 40% fresh water crops (around 1.6 million ha) will be destroyed leading to a loss of 10% GDP of the region. Therefore, because the tourism sector in the region draws on agricultural traditions as its basis and is also provisioned by the resources from these agricultural economy, clear negative impacts are foreseeable.

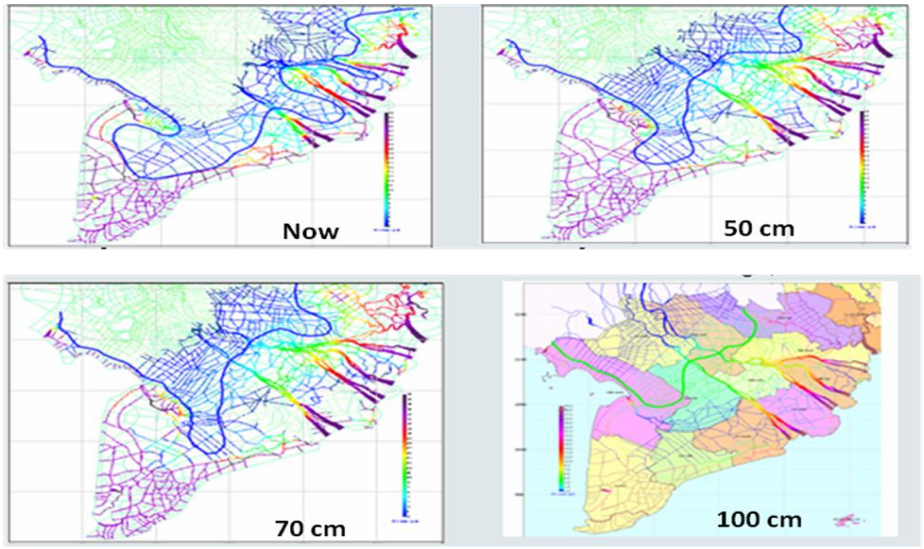

Figure 3 The Mekong Delta salinity 4g/liter line in April 2008
Source: Le and To (2011, p. 7)

The Asian Development Bank (ADB, 2013, p. 1) has stated that the Mekong Delta is *'One of the three most vulnerable deltas in the world to sea level rise'*. Statistical data from the Vietnam Institute of Meteorology Hydrology and Environment (2010, pp. 15-23) indicates, in the last fifty years (from 1950-2000) that the sea level in the Mekong Delta has risen on average by 3mm/year. The Institute also predicted that by the end of the 21st century, temperatures in the Mekong Delta would rise by 2.3°C relative to the average of 1980-1999. Sea level would rise between 0.65 m and 1.0 m by the end of 21st century compared to the period of 1980 – 1999.

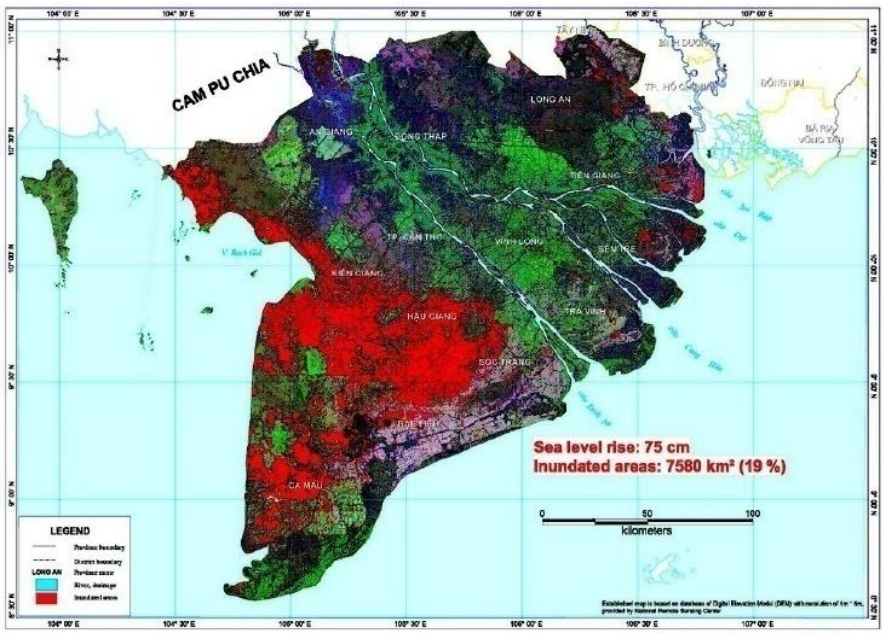

Figure 4 Inundation map of Mekong River Delta at 75 cm sea level rise scenario (red color is an inundated area)
Source: Duong (2009, p. 10)

Figure 4 and Figure 5 show that nearly 20% and 38% of the Delta will be flooded if sea level rises by 75 cm and 100 cm, respectively. The sea water level rise will first impact the southwest of the delta and after that it will expand to the central and other regions.

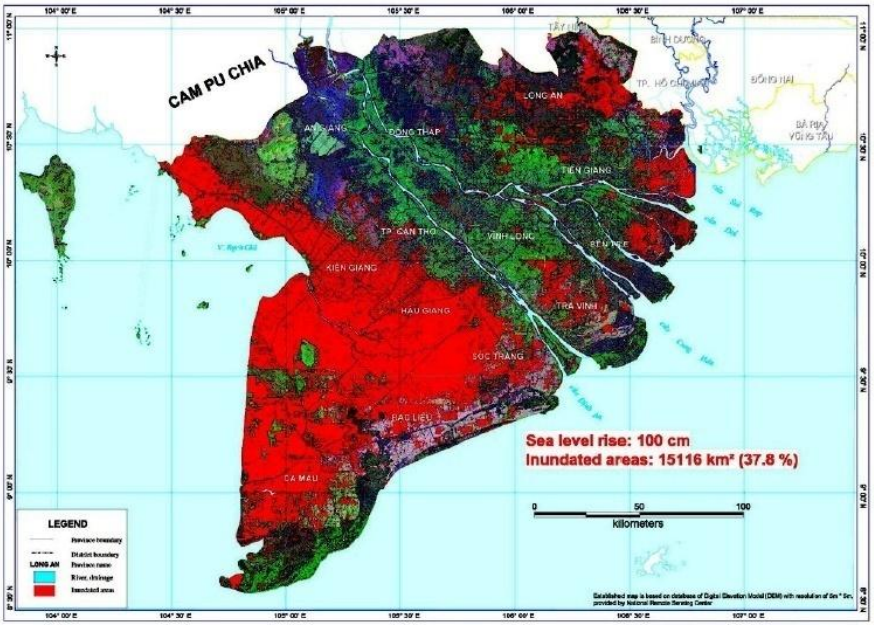

Figure 5 Inundation Map of Mekong River Delta at 100 cm sea level rise scenario, red color is inundated area
Source: Duong (2009, p. 11)

In the 100 cm scenario of the sea level rise, more than 4.7 million people i.e. approximately 27% of population of the Delta will be affected, often meaning displacement from their homes. Provinces with more inundated areas will have more people affected. These provinces include Ben Tre, Bac Lieu, Long An, Tra Vinh. Provinces such as Ca Mau, Kien Giang, Bac Lieu, Tra Vinh, Ben Tre and Soc Trang would face a big disaster with the 100 cm sea level rise scenario.

Sea level rise would lead to loss of land and a climate refugee crisis in the Delta. Climate change is also likely to force changes in the livelihoods of local people, especially minority ethics people. The Khmer minority group in the Mekong Delta is a vulnerable population in particular, due to very high rates of landlessness (Pamela, 2010). In the Mekong Delta, an assessment of migration as a consequence of climate change found floods would be a strong push-factor for some households to leave for other areas (Dun, 2009).

Data from the Ministry of Natural Resources and Environment (Ministry of Natural Resources and Environment, 2008) has indicated that in recent years, there have been more typhoons with a higher intensity affecting Vietnam. The typhoon track has moved towards southern latitudes and the typhoon season now ends later. Many typhoons move more abnormally making them difficult to predict.

Figure 6 points out that the average number of cyclones hitting Vietnam from 1991 to 2005 has increased rapidly in many regions compared to three previous decades. In particular, in the southern provinces the cyclone number has risen from 7 to 10 per year. Statistics from 1853 to 2010 shows more than 80 heavy tropical cyclones hitting Vietnam which have killed 19.000 people and other 45 million people being affected. The damage from such events reaches 5 billion US dollars (Pamela, 2010).

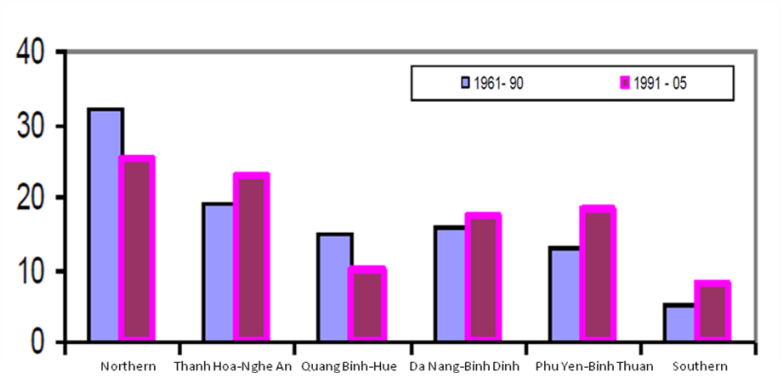

Figure 6 The average number of tropical cyclones per year hitting regions of Vietnam in 2 phases (1961-1990 and 1991-2005)
Source: Adapted from T. Tran (2012)

3. Tourism resources and tourism development in the Mekong Delta

3.1 Tourism resources in the Mekong Delta

Compared to other parts of Vietnam, Mekong Delta is the new historic area. Contemporary history of the Delta began about only 300 years ago. However, the area offers a wide range of tourism destinations including a range of natural heritage that showcases the region's biodiversity, to cultural heritage from southern Vietnam's rich prehistory, early historic and 20th century wartime historical sites (Figure 7).

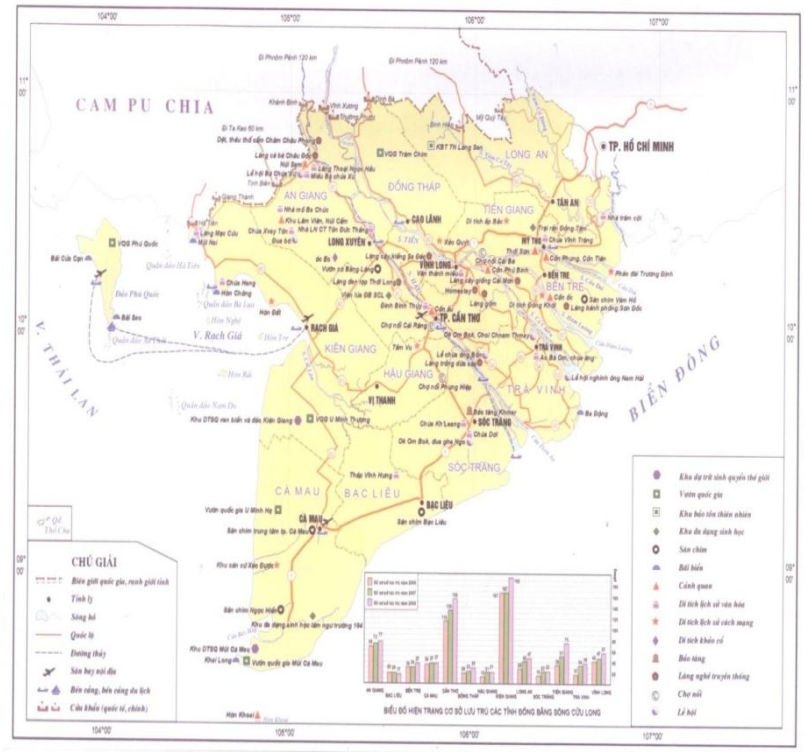

Figure 7 Mekong Delta tourist map
Source: Vietnam Tourism Institute (2010)

Table 1 shows that the Mekong Delta region has enormous natural and culture resources for tourism development. Around the Delta, there are 5 national parks, dozens of conservation areas and hundreds of fresh water fruit gardens. The Delta is covered by a dense network of rivers, canals and islets. Moreover, dozens of floating markets, pagodas and temples serve as tourist attractions. Besides these tangible attractions, the intangible values such as cuisines and music also have a unique value for tourism activities in the Delta.

Table 1 Tourism resource statistics in the Mekong Delta

Resources	Descriptions
National parks, biosphere reserve areas and conservation areas	- 5 national parks - 3 biosphere reserve areas - 15 conservation areas
Fruit gardens	More than 250 thousand ha with variety tropical fruits
Rivers, canals and islets	- 28,550 km rivers and canals - Hundred of islets
Floating markets	11 floating markets
Khmer pagodas	More than 500 pagodas which many have great values
Kinh Pagodas-temples	Hundreds of Kinh pagodas and temples which many have great values
Don ca tai tu (traditional music)	World culture Heritage
Foods	Many good foods with natural-friendly oriented
Culture sites	120 sites
Museums	18 museums
Culture festivals	9 types
Traditional handicraft villages	211 villages

Source: Author's own work

The Mekong River is a key tourism resource in the Mekong Delta. It hosts communities of 'water cultures' that rely on the river networks for transport, subsistence, and social ties. It represents a unique cultural heritage with associated tourism values. This fertile area has thousands of fruit gardens with hundreds of different kinds of fruits. The Mekong Delta is also rich in biodiversity. There are three biosphere reserve areas, five national parks and dozens of other protected areas. The Delta has eleven floating markets which add to the value for travelers to the Delta interested in exploring culture.

The unique livelihood of people around the Delta is identified as the most important cultural resource for tourism development. The Mekong Delta has a history that is characterized by waves of migrations from diverse ethnic groups; therefore the cultural values in this region are bound up in cultural diversity, including Kinh, Khmer, Hoa and Cham. Around the Delta, there are hundreds of pagodas and temples which are part of the rich-religious tapestry of these multiple ethnicities. The temples normally belong to Kinh ethnic group and its' constructions borrowed from the north of Vietnam. The pagoda constructions are divided into two types. One is from the north of Vietnam and the other is from Cambodia.

The Mekong Delta considered the 'new land' for contemporary Vietnamese and has mixed cultural background values. Regional cuisine represents a range of broader culinary influences accumulated through centuries of colonial and wider south-east Asian migrations and occupations. The most important character of Mekong Delta cuisine is the local and seasonal ingredients. Local inhabitants use natural local recipes for their food. Through the process of settlement in a new land, the Vietnamese has formed 'exploration cuisines' in the Mekong Delta which are totally different from neighboring food cultures such as Indian or Chinese. This cuisine is based on the natural characteristic of the foods that they collected (Nguyen, 2017).
Many festivals take place in the Delta. The festivals are based on religious or agricultural celebrations. According to the Ministry of Culture-Sport and Tourism (2016) there are 14 festivals in the Mekong Delta which can be developed for tourism activities.

The Mekong Delta has 211 handicraft villages (Ministry of Culture-Sport and Tourism, 2016). These villages are agriculture-oriented and also associated with a rice culture civilization. These villages use traditional skills for producing tools for cultivating rice and other agriculture products.

Traditional music is a strength of the region. 'Don Can Tai Tu', which is a typical traditional music of local people, has been acknowledged as valuable as world culture by UNESSCO. Besides, the music of Khmer and Hoa are also potential avenues for tourism development in the region.
The richness of cultural and natural heritage in the Mekong Delta leads to the availability of many tourist sites around the Delta. In total there are 36 sites which collectively attract the most tourists. There are 5 main tourism 'hotpots' in the area: Can Tho, Ben Tre-Tien Giang, An Giang, Ca Mau and Kien Giang. Can Tho, a major city with historic buildings and temples, is the most important location for international tourists while An Giang is the destination for domestic religious tourism.

3.2 Tourism development in the Mekong Delta

Tourism is a new but rapidly increasing industry in the Mekong Delta with annual development of 16.4% (Vietnam Tourism Institute, 2010). According to Pham (2013), the number of International tourists to the Mekong Delta in 2011 was more than 1.3 million, as domestic tourists were more than 8 million and income from tourism was about 3,500 billion VND (about 160 million USD). In 2013, there were about 1.7 million international tourists, 9 million domestic tourists (See Figure 8) and income from tourism reached 5,100 billion VND (about 250 million dollars) (Tran, 2015). In 2015, there were 1.8 million international tourists and 10.6 million domestic tourists visited Mekong Delta and income from tourism activities was around 8,500 billion VND (about 400 million USD). The tourism sector brings about 4% in total GDP for the region.

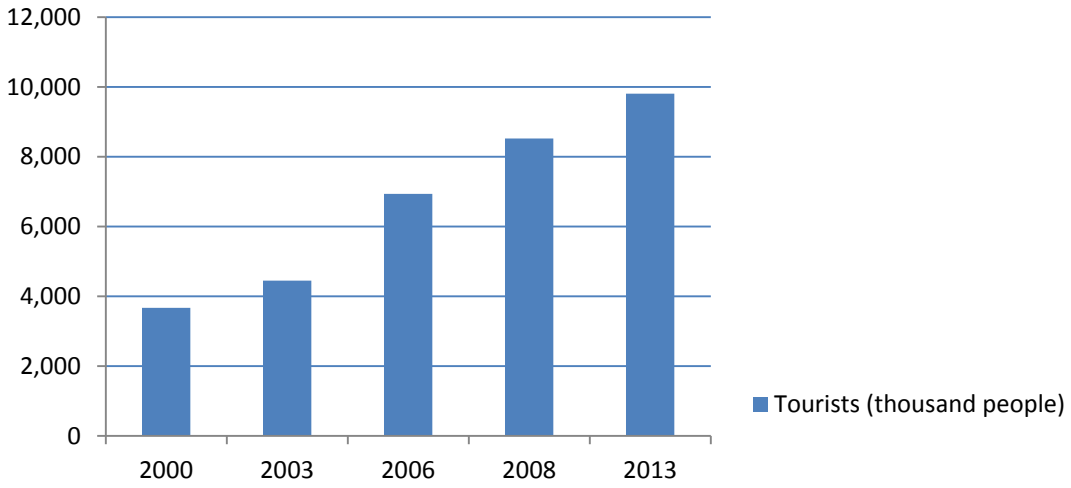

Figure 8 Domestic tourists to the Mekong Delta from 2000 to 2013
Source: Adapted from T. P. H. Tran (2015) and Vietnam Tourism Institute (2010)

The Mekong Delta tourism market has steadily increased during the last decade in term of number of tourists (See Table 2. The international tourist arrivals in the Delta has increased by around 20% per year. It is an emerging economic sector of considerable importance in the Delta. It is expected that by 2020 (Ministry of Culture-Sport and Tourism, 2010) the Mekong Delta will welcome 3.9 million international tourists. There are 82,700 people who will be directly involved in tourism, and income from the industry will be about 1,350 million dollars.

Table 2 International tourists to the Mekong Delta compared to total of Vietnam

	2000	2003	2006	2008	2013
Mekong Delta (Thousand people)	362	502	888	1,200	1,700
Vietnam (Thousand people)	2,140	2,429	3,583	4,253	7,572
% of Mekong Delta	16.9	20.7	24.8	28.2	22.5

Source: Adapted from Vietnam Tourism Institute (2010) and General Statistics Office of Vietnam (2014)

Table 3 indicates the number of international tourists to the Mekong Delta by market (Vietnam Tourism Institute, 2010). It shows that tourists in the Mekong Delta mainly originate from North East Asia and Western Europe. Tourist arrivals from North America are also increasing rapidly.

Table 3 International tourists to the Mekong Delta by market (%)

Market	2000	2003	2006
North America	5,0	4,5	9,1
East Europe	4,8	4,9	4,0
West Europe	38,4	40,4	31,7
North East Asia	47,1	48,6	49,1
South East Asia	1,4	0,8	1,8
Oceania	3,0	0,2	3,0
Middle East	0,3	0,5	1,4

Source: Vietnam Tourism Institute (2010)

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In 2013, there were 814 hotels with 16,580 rooms in the Delta. However, almost all these accommodations were small and medium sized. More than 17,000 workers are directly involved in the tourism industry (Ministry of Culture-Sport and Tourism, 2010). Statistic from Ministry of Culture-Sport and Tourism (2016) show that in 2015 the accommodations in the region had developed very quickly. There were 1,851 hotels with 35,742 rooms. Also, from this period there were 343 restaurants that were directly involved in tourism activities in the region. By 2020, there will be 50,000 hotel rooms in the region (Ministry of Culture-Sport and Tourism, 2016).

4. Policy on climate change and tourism-climate change concern in the Mekong Delta

The *Vietnamese Government's Resolution No. 60/2007/NQ-CP dated 3rd December 2007* (Vietnamese Government, 2007) and the *National Target Program to Respond to Climate Change* (Ministry of Natural Resources and Environment, 2008) have established a framework for tackling climate change in Vietnam. This framework has identified an 8-step climate change response. These papers pointed out that enacting climate change impact evaluation, increasing people's awareness, and climate change adaptations are the main tasks in response to climate change (Figure 9). Moreover, evaluating climate change impact and implementing an action plan in certain sectors and at the local level toward sustainability is the priority strategic objective. This government policy is a foundational call-to-action and is a starting point directing this project.

1. Identify the extent of climate change and assess climate change impacts on sector, area and locality;
2. Identify measures to respond to climate change;
3. Promote scientific and technological activities to that respond to climate change;
4. Enhance organizational structure, institutional capacity and development and implementation of policies;
5. Enhance public awareness and develop human resources;
6. Promote international cooperation;
7. Mainstream climate change issues into socio-economic, sectoral and local development strategies, plans and planning;
8. Develop and implement action plans within sectors and localities to respond to climate change.

Strategic objectives: Assess climate change impacts on sectors and regions and develop feasible action plans to effectively respond to climte change in the short and long-term to ensure sustainable development of the Mekong Delta. To take opportunities to develop towards a low-carbon economy, and to join the international community's efforts in mitigating climate change.

Figure 9 National target program to respond to climate change
Source: Adapted from Ministry of Natural Resources and Environment (2008, pp. 22-23)

Based on existing climate change scenarios, the Vietnam Ministry of Natural Resources and Environment has made a general evaluation and identifies the areas and sectors that are vulnerable under climate change indicates that Vietnam will be impacted by climate change in various sectors and areas. The Mekong Delta is vulnerable to several types of climate change impacts: temperature, sea level rise, floods, flash floods and landslides, tropical cyclones and droughts. Tourism in the region will be directly impacted by all other factors.

Table 4 Vulnerability to climate change identification as a national target, the words in red indicate Mekong region and its tourism related issues

Source: Ministry of Natural Resources and Environment (2008, pp. 16-17)

Climate change impact	Vulnerable areas	Vulnerable sectors	Vulnerable communities
Temperature increase	• Mountainous areas: Northern East, Western East and North Central part • Northern part Delta	• Agriculture and food security • Aquaculture • Natural ecology systems and biodiversity • Water resources • Energy (production and consumption) • Community health care	• Poor farmers • Ethnic minority people, senior citizens, children and women
Sea level rise	• Coastal Areas, especially deltas and flooded areas (Mekong River Delta, Red River Delta and coastal Central part) • Islands	• Agriculture and food security • Aquaculture • Sea and coastal ecological systems • Water resources (surface and ground water) • Energy • Tourism • Residential Space • Infrastructure, industrial zones	• Coastal communities, especially poor farmers and fishermen • Senior citizens, children and women
Floods, flash floods and landslide	• Coastal Areas (including delta areas and flooded areas: Delta and coastal Northern part, Mekong River Delta and coastal Central part) • Mountainous areas: Northern West, Northern East, North Central part and Highlands	• Agriculture and food security • Aquaculture • Transportation • Water resources • Infrastructure • Residential Space • Health care and life • Trade and Tourism	• Coastal communities • Mountainous communities, especially ethnic minority groups • Senior citizens, children and women
Tropical cyclones	• Coastal Areas, especially coastal Central part, Red River delta and Mekong river • Islands	• Agriculture and food security • Aquaculture • Transportation • Energy • Offshore and coastal activities • Infrastructure • Place of Residence • Health care and life • Trade and Tourism	• Coastal communities, especially fishermen • Senior citizens, children and women
Droughts	• Central Part, especially South Central part • Delta and Northern part Midland • Mekong Delta • Highlands	• Agriculture and food security • Water resources • Energy (hydro power) • Waterways • Health care and life	

The National Target Program to Response to Climate Change also evaluates levels of sensitivity and adaptability for particular sectors that are being impacted by climate change. The highly sensitive sectors are water resources, agriculture and food security and marine and coastal ecosystems. Tourism, sport, and recreational activities are shown as sensitive and adaptable to a certain extent (Table 5).

Table 5 Level of sensitiveness and adaptability, the red color indicate tourism related issues
Source: Ministry of Natural Resources and Environment (2008, p. 18)

Target categories	Sensitiveness	Adaptability
Water resources	Highly sensitive	Adaptable to a certain extent
Agriculture and food security	Highly sensitive	Adaptable to a certain extent
Marine and coastal ecosystems	Highly sensitive	Unclear or hardly adaptable
Forestry	Sensitive	Adaptable to a certain extent
Aquaculture	Sensitive	Adaptable to a certain extent
Irrigation (mostly infrastructure)	Sensitive	Adaptable to a certain extent
Energy	Sensitive	Adaptable to a certain extent
Transportation	Sensitive	Adaptable to a certain extent
Industry and Construction	Sensitive	Adaptable to a certain extent
Tourism, Sport, and Recreational activities	Sensitive	Adaptable to a certain extent
Trade and Services	Sensitive	Adaptable to a certain extent
Residential areas	Sensitive	Adaptable to a certain extent
Health care	Sensitive	Adaptable to a certain extent
Migration	Sensitive	Adaptable to a certain extent
Natural Landscape	Sensitive	Unclear

In addition, the *National Target Program to Response to Climate Change* also indicates that the tourism sector will experience high-level of impact from sea level rise, tropical cyclone and flood while temperature rise and drought have a medium impact on this sector (See Table 6). However, it is only a general prediction based established by a relative comparison throughout the whole country. Moreover, impact is also regarding how tourism resources tend to vary for certain locations.

Table 6 Potential impacts of climate change and sea level rise by categories, the red color indicates impacts in the tourism sector

Source: Ministry of Natural Resources and Environment (2008, p. 19)

Sector, area, object	Impact factors					
	Temperature rise	**Sea level rise**	**Tropical cyclones**	**Flood**	**Drought**	**Other climatic extremes**
Agriculture and food security	High	High	High	High	High	High
Aquaculture	High	High	High	High	Medium	Medium
Energy	High	Medium	Medium	Medium	High	Medium
Industry	High	High	Medium	Medium	Medium	Medium
Transportation	High	High	High	High	Medium	Medium
Construction	High	High	High	High	Medium	High
Tourism	Medium	High	High	High	Medium	Medium
Health care	High	Medium	Medium	High	High	High
Natural ecosystems and biodiversity	High	High	Medium	Medium	Medium	Medium
Water resources	High	High	Medium	High	High	Medium
Residential area	Medium	High	High	High	Medium	Medium

Tourism stakeholders in the Mekong Delta consist of central government authorities, provincial authorities, state-own companies, private and family companies, workers, tourists and tourism associations. According to Mekong Delta master plan for tourism development to 2020 (Vietnam Tourism Institute, 2010), fruit garden and river ecotourism are considered as the most important part for tourism development in the Mekong Delta. However, there is not a doubt that these resources are most vulnerable from climate change.

An evaluation from Ministry of Culture-Sport and Tourism (2016) in the publication 'Tourism Planning for Mekong Delta to 2030', makes the point *'Climate change may have a big impact to tourism resources in the Mekong Delta, especially the resources are located close to the seaside. The traditional cultural values may decrease during the climate change adaptation process. Moreover, extreme weather could damage the ancient cultural structures in the region'*. It is a short and rare piece of analysis by the central tourism authority in Vietnam in which tourism is forecasted to be impacted by climate change. Mekong Delta culture is based on rice agriculture. Culture values such as temples and its related festivals are building to ceremony for agricultural activities. The translation from agriculture-based economy to other forms of economy would lead to the extinction of these temples and festivals. In addition, these tangible culture values such as pagodas and temples are the foundation to conserve related intangible values. The missing temples and pagodas leads to the absence of it festivals as certain consequences.

5. Conclusion

Above analysis pointed out that climate change is real and poses powerful impacts on the tourism industry in the Mekong Delta of Vietnam. The most important threat is sea level rise. However, other climate change consequences also should be considered in the climate change evaluation and adaptation for

the region. Tourism resources and facilities in the region would suffer an enormous influence in any change of climate. A general planning strategy for climate change adaptation in tourism in the region is absent, a situation that needs rectifying. Therefore, a complete national climate change program target on the tourism sector must be introduced for a sustainable regional tourism industry.

Mekong Delta has rich tourism resources and the tourism sector has high potential. Tourism in the region is however highly vulnerable from climate change. The attractiveness and unexplored nature of the Mekong Delta region offers many exciting opportunities for tourists. Climate change impacts the Delta's sea level rise, rising temperature, extreme weather and ecosystem change. As a result, predominant tourism modes in the Delta i.e. ecotourism, islet tourism, national park tourism and mangrove forest tourism are vulnerable. More theoretical and practice studies should be conducted to fulfil the gap of knowledge toward a better understanding of challenges that the delta will be facing in the coming era. Therefore, climate change impact evaluation and climate change awareness toward sustainable tourism development are very important elements in the Delta development process. Carrying out research that would help in finding solutions for this problem is very important for this region.

7. References

ADB. (2013). Climate risks in the Mekong Delta: Ca Mau and Kien Giang provinces of Vietnam. Mandaluyong City, Philippines: Asian Development Bank.

Doan, T. G. (2009). *Climate change impact and adaption in the Mekong Delta*. Paper presented at the Climate change adaption in three coastal provinces in the Mekong Delta, Tra Vinh.

Dun, O. (2009). Vietnam Case Study Report. EACHFOR Environmental Change and Forced Migration Scenarios: European Commission.

Duong, V. C. (2009). *Vietnam climate change scenario, role of biosphere reserves: Soc Trang, Tra Vinh, Ben Tre*. Paper presented at the Adaptation with climate change in coastal areas of Mekong Delta, Tra Vinh.

General Statistics Office of Vietnam. (2014). *Vietnam statistics yearbook 2013*. Ha Noi: Statistical Publishing House.

ICEM. (2009). Forum report: Mekong Delta climate change forum 2009: International Centre for Environmental Management.

Le, M. H., & To, Q. T. (2011). Water solution for Mekong Delta food development in climate change. from Vietnam Academy for Water Resources

Ministry of Culture-Sport and Tourism. (2010). Decision 803/QĐ-BVHTTDL *Acrredited for Mekong Delta master plan for tourism development to 2020*: Ministry of Culture, Sport and Tourism.

Ministry of Culture-Sport and Tourism. (2016). Tourism planning for Mekong Delta to 2030. Ha Noi.

Ministry of Natural Resources and Environment. (2008). National target program to response to climate change. Ha Noi: Minstry of Natural Resources and Environment.

Ministry of Natural Resources and Environment. (2010). Vietnam-Netherlands Mekong Delta Masterplan project: Climate change in the Mekong Delta: climate scenario's, sea level rise, other effects. Sub Institute of Hydrometeorology and Environment of South Vietnam.

Ministry of Natural Resources and Environment. (2016). Climate change and sea level rise scenarios for Vietnam. Ha Noi.

Nguyen, M. T. (Producer). (2017, 12 December 2018). Special Southern Vietnam cuisine. Retrieved from http://huc.edu.vn/doc-dao-am-thuc-nam-bo-5003-vi.htm

Oranop-na-Ayuthaya, P. (2015). Raising Climate Change Awareness of Communities in the Lower Mekong Basin *USAID Mekong Adaptation and Resilience to Climate Change*: USAID.

Pamela, M. (2010). The Social Dimensions of Adaptation to Climate Change in Vietnam. WorldBank.

Pham, P. N. (2013). New year report 2013: Mekong Delta Tourism Association.

Tran, T. (2012). Climate change scenarios for Vietnam *WISDOM 5th PhD Scientific Seminar*. Can Tho: WISDOM.

Tran, T. (2017). Challances of the Mekong Delta under climate change *Sustainable development for Mekong Delta to adaptation climate change*. Can Tho.

Tran, T. P. H. (2015). Tourism Mekong Delta in the context of international economic intergration. http://www.saigonact.edu.vn/

Vietnam Institute of Meteorology Hydrology and Environment. (2010). Impacts of Climate Change on Water Resources and Adaptation Measures. Ha Noi: Vietnam Institute of Meteorology Hydrology and Environment.

Vietnam Tourism Institute. (2010). Mekong Delta master plan for tourism development to 2020 (pp. 100): Vietnam Tourism Institute.

Government's Resolution No. 60/2007/NQ-CP dated 3rd December 2007 (2007).