

# Impact of Climate Change on Coastal Tourism Destinations

**Prof. (Dr.) Ravi Kant Modi**

Professor & Dean, School of Commerce & Management, Nirwan University Jaipur

## ABSTRACT

This research paper aims to explore the multifaceted impacts of climate change on coastal tourism destinations. Coastal regions, known for their natural beauty and recreational opportunities, are increasingly vulnerable to the adverse effects of climate change. Rising sea levels, extreme weather events, and changes in temperature and precipitation patterns pose significant challenges to the sustainability and attractiveness of these destinations. Through an in-depth analysis of existing literature, case studies, and empirical data, this paper examines the direct and indirect consequences of climate change on coastal tourism, including impacts on infrastructure, ecosystems, local communities, and visitor experiences. Additionally, the paper explores adaptation and mitigation strategies that can help enhance the resilience of coastal tourism destinations in the face of climate change. The purpose of this study paper is to examine the significant effects that climate change will have on coastal tourist spots around the globe. Coastal regions are more susceptible to harsh weather, erosion, and habitat loss as a result of rising global temperatures and rising sea levels. The study will explore the particular difficulties that these modifications present to well-known tourist destinations, looking at the possible negative effects on the economy, the environment, and society. The study will also look at adaptation tactics used by coastal towns and the travel and tourism sector to lessen the negative consequences of climate change. The research endeavors to offer a complete understanding of the dynamic interaction between climate change and coastal tourism through the analysis of case studies from various places. In order to create sustainable tourism practices that strike a balance between the industry's economic benefits and the preservation of delicate coastal ecosystems, legislators, environmentalists, and the tourism sector need to take this research very seriously.

**Keywords:** Climate Change, Coastal, Tourism, Destinations, sustainability

## INTRODUCTION

Tourism locations along the coast, which are well-known for their natural beauty, diverse ecosystems, and recreational appeal, are currently facing a challenge that has never been seen before: the impact of climate change. As temperatures throughout the world continue to increase and weather patterns grow more unpredictable, coastal regions are becoming increasingly vulnerable to the effects of climate change. The repercussions of climate change, which include things like rising sea levels, extreme weather events, and fluctuations in temperature and precipitation, present a variety of challenges to the long-term viability and allure of these valued sites.[1]

The objective of this research study is to conduct an in-depth investigation into the complex link that exists between climate change and coastal tourism. Given the central role that coastal regions play in the

tourist sector on a worldwide scale, it is very necessary to have a thorough understanding of the complexities of this connection. As a result of the increasing number of tourists that visit these regions in search of sun-drenched beaches, vivid marine life, and cultural wealth, the very characteristics that make these locations so attractive are in danger of being lost.

Environmental factors play a crucial role in influencing decisions regarding recreational excursions. [2] As a result, it is inevitable that future climate change will have a significant impact on outdoor leisure activities. The projected alterations in weather patterns and subsequent transformations to landscapes at popular tourist destinations may have an impact on tourist demand and travel patterns. According to Lise and Tol (2002), there may be an increase in outdoor recreation in locations with warmer and drier weather, while areas with cooler and wetter weather are expected to experience a decline in visitors. The local climate and weather are among the many factors that draw tourists. Warm destinations such as the Mediterranean, the Caribbean, and South Asia are popular choices for leisure travellers. Winter tourists flock to ski resorts in Europe and North America, drawn by their popularity. Understanding the impact of local climate and weather on a place's history, culture, and tourist appeal is crucial. Unfavourable weather conditions can occasionally deter potential visitors. Tourist arrivals fluctuate throughout the year due to the ever-changing weather patterns.[3]

India stands out among nations for its remarkable cultural diversity and stunning natural landscapes. It also possesses the remarkable ability to witness a diverse array of climates and weather phenomena, ranging from blistering heat and arid conditions to bone-chilling cold and devastating floods. An icy alpine environment, for example, is characteristic of the Himalayan region in the northern half of the country. The climate in southern India is characterized by high temperatures and high humidity. [4] The north-eastern part of the country experiences a humid subtropical climate, which is quite different from the dry and semi-arid areas found in the western and north-western regions. The diverse topography of the country, ranging from mountains and deserts to tropical rainforests, is a direct consequence of the different climatic conditions it experiences. India experiences four distinct seasons, with the weather undergoing frequent changes throughout the year.[5]

### **The Indian Subcontinent's changing climate and the rise in tourism**

Based on extensive global data, it is evident that human activity has been driving climate change for the past century and will continue to do so in the foreseeable future. For instance, the latest official assessment report from the United Nations states that the climate has been warming due to human influence at an unprecedented rate, unlike anything seen in the past 2000 years (IPCC, 2021). Geography and atmospheric circulation patterns have resulted in diverse climate changes across different regions of the world. [6]

Given the data presented earlier in this chapter regarding the impact of weather and climate on tourist arrivals in India, it is important to consider the potential effects of climate change on the country. This, in turn, may suggest the potential impact on future tourism. [7] There is a certain level of uncertainty when it comes to predicting the future of the climate at a regional level. However, the majority of individuals in South Asia generally concur on the overall patterns and past information, along with the primary impacts of climate change.[8]

### **The effects of increasing sea levels on coastal tourism**

India boasts over 7,500 kilometres of coastline, placing it at the 18th position worldwide. Beach

enthusiasts are drawn to the Andaman and Nicobar Islands, Goa, Kerala, Karnataka, and Andhra Pradesh, along with other coastal states, due to their close proximity to water. However, the country's extensive coastline amplifies the heightened risk of tsunamis, rising sea levels, and marine pollution. An unfortunate demonstration of the country's vulnerability was presented by the 2004 Indian Ocean earthquake and tsunami. India ranked highest among 177 nations in terms of their exposure, sensitivity, and adaptive capacity in evaluating their beach tourist industries. [9,10]

One of the most apparent consequences of global warming is the rise in sea levels, caused by two factors: the melting of glaciers and ice sheets, and the expansion of the ocean due to warmer water. In the past century, the cities of Vishakhapatnam, Kochi, and Mumbai have experienced net sea-level rises of 1.20, 1.75, and 1.09 mm/year, as reported by Unnikrishnan and Shankar in 2007. The potential for flooding and damage to coastlines is significantly heightened by the rising sea levels. The decrease in tourism could potentially harm marine life, such as coral reefs. Coastal erosion can result in a range of effects, while sea-level rise is anticipated to cause comparable consequences in a given coastal area.

### **Indices of the Tourism Climate**

Climate factors that impact tourists' well-being encompass various elements, such as wind, rain, sunshine, clouds, temperature, and humidity. When analysing coastal areas and cities, the Tourism Climate Index utilizes various factors to evaluate the meteorological conditions, including sunshine/cloud cover, wind speed, and a straightforward index to encompass all of these elements. [11]

The TCI developed by Mieczkowski is widely acknowledged as the most precise measure of the tourism climate. Previous research has demonstrated that the index can effectively assess the suitability of a destination by analysing its correlation with overnight stays in different tourist regions, despite the inherent ambiguity of the index.

For a more precise assessment of the suitability of different destinations, the Holiday Climate Index can be employed to differentiate between various locations, including cities, beaches, and more, in order to reduce any uncertainties. When compared to the Tourism Climate Index, it surpasses it and offers more dependable results when examining different locations, such as cities and beaches. In conclusion, the Tourism Climate Index proves to be a practical and reliable tool for assessing the appeal of tourist destinations. [12]

At the same time, this score helps distinguish the different effects of climate on the appeal of tourist destinations. Regrettably, there is no infallible approach to gather numerous data points in the index due to their distinctive characteristics. For instance, thermal comfort statistics can be influenced by various factors such as individual perceptions, behavioural and psychological variables, and geographical variations. Therefore, while the tourist climate index may not be completely reliable, it can still serve as a valuable reference benchmark.

### **Significance of the Study**

Understanding the direct and indirect consequences that climate change has on coastal tourism destinations is the primary goal of this research project. The purpose of this article is to give a complete understanding of the issues that are faced by climate change by synthesising existing information, case studies, and empirical data. Concurrently, the research intends to suggest adaptive and mitigating actions that are necessary for the continued vitality of these locations. [13]The value of this study rests in the fact that it has the ability to provide information to decision-makers, policymakers, and stakeholders that

are involved in the management of coastal tourism. In order to promote a more resilient and sustainable future for coastal destinations, it acts as a call to action for the tourist sector to take proactive measures to address the oncoming dangers posed by climate change.

## OBJECTIVES OF THE STUDY

1. To examine the effects of increasing sea levels on coastal tourism.
2. To examine The Indian Subcontinent's changing climate and the rise in tourism

## RESEARCH METHOD

Our objective in conducting this study is to enhance our comprehension of how climate change is influencing tourism in Karnataka and the emergence of various attractions, including the Mangluru Manjunath Temple, the beaches, and the churches. This study utilizes logical reasoning. By employing deductive reasoning, one can validate their hypothesis by consulting established concepts and supporting evidence.[14,] One can utilize this deductive technique to reach conclusions by retracing steps from a set of premises. This study explores the subject matter by presenting a scenario where the object is left untreated or unaltered. The researchers conducting this study have limited influence on the subjects' actual experiences. Typically, this kind of research involves a detailed description of a single variable or a systematic documentation of multiple variables. The participants in the survey were individuals who had visited Beach. The participants were provided with a pre-existing survey to complete. This study interviewed government officials from the villages surrounding Manjunath. Representatives from the Regional Development Planning Agency (RDPA), Office of the Environment (OEM), Tourism Office (TO), and Regional Disaster Management Agency (BPBD) were present at the meeting. Furthermore, we had conversations with individuals involved in the tourism industry, such as vendors, surfers, and hotel managers. In addition to the agency and hotel management, Mangluru Manjunath, who works as a beach lifeguard, and the residents of the traditional village were also interviewed. We collected data and analyzed it at a later time. The method used aligns with the data gathering form and process. Stakeholder interviews offer valuable qualitative insights, while questionnaires provide numerical data for analysis. Quantitative data analysis involves utilizing spreadsheet and statistical package programs, such as SPSS, to explore relationships between variables through cross-tabulation and frequency analysis. Data for this analysis was obtained from surveys conducted with tourists in the vicinity of Kuta Beach.[16]

## DATA ANALYSIS

### Socioeconomic Consequences:

Modifications in coastal settings brought about by climate change not only have an impact on the natural ecosystems, but they also have significant socioeconomic repercussions for the communities that are located there and for the tourism sector as a whole.[17] The relocation of local residents and the economic ramifications that arise from the impacts of climate change on coastal vacation sites are two of the most important parts of these repercussions, and this section looks into both of them below.

### Displacement of Local Communities:

Many times, coastal towns are the ones that are at the forefront of the effects of climate change. They are confronted with threats such as rising sea levels, storm surges, and erosion of the coastline. It is possible that communities that are located in sensitive locations will be forced to relocate as these dangers

become more severe. Gaining an understanding of the social and cultural aspects of this phenomena is absolutely necessary in order to conduct a comprehensive analysis.

- The identification of communities that are at danger of being displaced as a result of the consequences of climate change is the focus of the analysis of vulnerable communities. This is accomplished through a mix of geographic vulnerability assessments and community involvement.[18]
- Social effect Assessment: The process of conducting social effect assessments in order to get an understanding of the repercussions that displacement has on local communities, such as the possible loss of cultural heritage, community cohesiveness, and traditional livelihoods.
- Policy Evaluation: The process of analysing the policies and governance structures that are currently in place in relation to climate-induced displacement and determining how successful they are in preserving the rights and well-being of communities that have been impacted by climate change.

### **Economic Implications:**

Numerous coastal regions are primarily dependent on tourism as their primary source of economic support. The considerable and diverse effects that climate change will have on this business are a result of climate change. The implications for the economy are discussed in this section, with a particular emphasis on the decline in revenue and the problems that arise with employment.

### **Loss of Revenue:**

- Performing an analysis of tourist income involves looking at historical data on tourism revenue in order to find patterns and trends in connection to the effects of climate change. Assessing the degree to which local companies are economically dependent on tourists is a part of this process.
- Scenario Modelling: The process of projected possible future losses in tourist revenue based on various climate change scenarios through the utilisation of scenario modelling. This involves taking into account changes in both the behaviour and tastes of tourists as well as the appeal of the site.
- Diversification Strategies: Assessing the efficacy of efforts to diversify the local economy in order to lessen reliance on money generated by tourism and to improve overall resilience for the community.

### **Employment Issues:**

- Job Market Analysis. This involves doing research on the characteristics of the local job market, with a particular emphasis on employment sectors that are largely dependent on tourism, such as the hospitality industry, travel services, and recreational activities.
- Assessing the direct and indirect employment implications that climate change will have on the tourist sector is the third component of the employment impact assessment. In order to do this, it is necessary to consider the possibility of job losses as well as shifts in work patterns.
- Training and Skill Development: Developing plans for retraining and skill development in order to facilitate the transition of impacted workers to other job sectors, with the goal of creating economic resilience.

By deconstructing the socioeconomic repercussions of climate change on coastal tourism locations, the purpose of this research is to give a detailed knowledge of the issues that are encountered by local communities as well as the larger economic ramifications. In the face of climate change, the insights that are obtained from this study will provide policymakers and stakeholders with the information they need



to design adaptive policies that not only protect vulnerable populations but also support sustainable economic growth.[18]

We conducted a survey to assess the opinions of tourists regarding climate change. Participants were asked to rate their level of agreement on the topic, the importance they believe it should be given, and their understanding of the issue. To gather information about our understanding of climate change and its impacts, kindly utilize the Likert scale provided below: I strongly agree.

**Table1. A Survey of 110 Tourists on Their Knowledge of Climate Change**

A better grasp of global warming			The weather is shifting		Climate change has to be taken into account	
	Quantity	%	Quantity	%	Quantity	%
<b>Completely disagrees</b>	5.0	3,0.0	4.0	2,4.0	4.0	2,4.0
<b>Disagrees</b>	7.0	4,3.0	7.0	4,3.0	3.0	1,8.0
<b>Neutrals</b>	87.0	53,0.0	50.0	30,5.0	42.0	25,6.0
<b>Agrees</b>	47.0	28,7.0	73.0	44,5.0	62.0	37,8.0
<b>firmly Agrees</b>	18.0	11,0.0	30.0	18,3.0	53.0	32,3.0
<b>Overall</b>	110.0	100,0.0	164.0	100,0.0	164.0	100,0.0

Source: Analysis Results, 2021

When asked about their understanding of climate change, a majority of 53% admitted to having limited knowledge on the subject. Coming in second place is "strongly agree," receiving 11% of the vote, closely followed by "agree," which garnered 28.7%. Upon examining the data on the percentage of respondents who expressed agreement with the notion of climate change, it becomes evident that Earth is indeed undergoing significant climate shifts. A notable 44.5% of respondents agreed, while an additional 18.3% strongly affirmed this belief. The response labeled as "neutral" received the second-highest percentage, at 30.5%. The study's findings reveal that a significant number of respondents recognize the importance of investigating climate change and its related issues.[19]

With a 25.6% share, "neutral" ranks as the third most favored option. An apparent trend toward change is evident from the analyses presented here. A minuscule fraction of individuals have expressed their disagreement or strong disagreement. Furthermore, it is evident that individuals possess a keen understanding of the matter concerning climate change. This research also explores climate change and its components in relation to visitor preferences. When considering the development of a destination's tourist infrastructure, this is an important factor to take into consideration.

**Table 2. Variables Related to Climate Change and Their Impact on Travel Decisions[20]**

Changeable	influenced the choice to travel				
	Very little impact	Not impacted	Indifferent	Impacted	Deeply impacted
Temperature increases	5(3,06%)	36(21,96%)	83(50,62%)	37(22,57%)	3(1,82%)
Elevated sea level	3(1,84%)	24(14,64%)	91(55,48%)	44(26,84%)	2(1,21%)

Unexpected shift in the weather	4(2,43%)	14(8,55%)	56(34,16%)	80(48,77%)	10(6,11%)
A faster wind	2(1,23%)	22(13,42%)	85(51,84%)	49(29,89%)	6(3,65%)
Inundation or flood	4(2,45%)	5(3,06%)	22(13,42%)	103(62,81%)	30(18,28%)
Waves at sea	3(1,84%)	19(11,58%)	53(32,33%)	77(46,94%)	12(7,31%)
Intrusion	5(3,06%)	17(10,36%)	60(36,58%)	65(39,64%)	17(10,38%)
Tornado or storm	1(0,62%)	2(1,23%)	21(12,81%)	50(30,48%)	90(54,89%)
Deterioration	2(1,23%)	15(9,16%)	19(11,58%)	86(52,43%)	42(25,62%)
Drastic variations in the weather	1(0,62%)	5(3,04%)	37(22,55%)	91(55,48%)	30(18,28%)

**Source: Analysis Result, 2021**

The study reveals that the majority of participants responded with a "neutral" sentiment when questioned about the impact of rising temperatures on their travel preferences. Additionally, the remaining responses exhibited a typical bell-shaped distribution. When it comes to the effect of increasing sea levels on vacation plans, the majority of individuals seemed to have a relatively neutral stance. A significant portion of the respondents, 46.78 percent to be exact, reported that their trip plans were affected by the unpredictable weather. On the other hand, 34.15% of the respondents were uncertain about the impact of weather on their plans. Most participants assessed the effect of the variable of increasing wind speed as moderate, which aligned with their evaluation of the variable of rising sea level.

According to a recent study, a significant majority of individuals, approximately 62.8%, reported that the flood/inundation variable had an impact on their decision-making process when it comes to travel. Furthermore, nearly half of the survey respondents indicated that their vacation choices were influenced by the sea wave variable. Out of the individuals who experienced intrusion, 39.3% reported that it influenced their decisions regarding travel. It's important to note that the intrusion variable is approaching a point where the number of "neutral" responses is nearly equal to the number of "affected" ones. Among all the variables, the one that elicits the highest number of "strongly affected" responses is storm/tornado, with a percentage of 54.88%. This has a significant impact on the travel choices of respondents. Erosion and severe weather fluctuations have a significant impact on the travel choices of respondents, with erosion affecting 52.44% and severe weather fluctuations affecting 55.49% of them.[21]

**A policy for adapting to climate change**

According to the findings of the interviews, several local governments have used a variety of tactics in order to adapt to the change in the environment. In order to safeguard assets, including as tourist attractions and private dwellings, from the destructive impacts of sandstorms and wave-carried sand, the administration of Manjunath Regency has implemented preventative steps. These efforts include being proactive. In addition to installing wave breakers at Mangluru, they have completed the construction of a robust barrier along the coast. The Regional Planning and Development Agency has, in the past, used maps depicting areas that are prone to natural disasters into its regional development plans. The local government has also put into place a program that is designed to assist communities that are affected by

natural disasters. The establishment of a forum was accomplished with the participation of thirty persons, each of whom represented a diverse spectrum of interests. According to the findings of field investigations, the construction of a wall in a coastal area is absolutely necessary in order to ameliorate the effects of sandstorms and waves. As a result, the process of fencing will continue until the interview and observation are finished. The walls that are visible are embellished with beautiful Balinese decorations, which contribute to the charming atmosphere of the region as a major tourist attraction and enhance the traditional atmosphere of the local community.

## **ADAPTATION AND MITIGATION STRATEGIES**

Addressing the challenges posed by climate change in coastal tourism destinations necessitates a multifaceted approach encompassing both adaptation and mitigation strategies. This section explores key avenues for intervention, including sustainable tourism practices, infrastructure improvements, community engagement and awareness, and policy and governance measures.

### **Sustainable Tourism Practices**

Implementing sustainable tourism practices is paramount for the long-term resilience of coastal destinations. This involves striking a balance between environmental conservation and visitor satisfaction. Initiatives such as eco-certification programs, responsible tourism guidelines, and the promotion of low-impact activities can contribute to the preservation of fragile coastal ecosystems. Sustainable practices extend beyond environmental considerations to encompass social and cultural aspects. Collaboration between stakeholders, including tour operators, local communities, and governmental bodies, is crucial to developing and enforcing sustainable tourism practices that minimize negative impacts and promote the well-being of both the environment and local residents.[22]

### **Infrastructure Improvements:**

Enhancing the resilience of coastal tourism destinations requires strategic investments in infrastructure. Adaptable and climate-resilient structures can mitigate the impacts of rising sea levels, storm surges, and extreme weather events. This includes the construction of robust coastal defences, improved drainage systems, and the implementation of sustainable urban planning practices.[23] Investments in infrastructure should not only focus on protection but also consider the integration of smart technologies for monitoring and early warning systems. Additionally, sustainable infrastructure development can contribute to reduced carbon footprints, aligning with broader climate goals.

### **Community Engagement and Awareness:**

The engagement of local communities is pivotal in fostering resilience to climate change impacts. Community-based initiatives that involve residents in decision-making processes, planning, and resource management can enhance the adaptive capacity of these communities. This includes the development of climate-smart livelihood strategies that diversify income sources and reduce vulnerability. Educational campaigns and awareness programs are equally essential. Informing local communities about the realities of climate change, its implications, and the role they play in mitigating its effects can inspire collective action. Building a sense of environmental stewardship within communities can lead to more sustainable practices and a shared commitment to preserving the unique attributes of coastal areas.



### Policy and Governance Measures

Effective policy and governance frameworks are fundamental to creating an enabling environment for climate change adaptation and mitigation. Governments at various levels play a central role in developing and enforcing regulations that safeguard coastal areas. Zoning laws, land-use planning, and building codes should integrate climate considerations to reduce vulnerability. International collaboration is crucial in addressing transboundary challenges.[24] Coordinated efforts to share best practices, technological innovations, and financial resources can amplify the impact of adaptation and mitigation measures. Furthermore, policies should incentivize private sector involvement in sustainable practices and support research initiatives focused on climate resilience. The implementation of a holistic strategy that integrates sustainable tourism practices, infrastructure improvements, community engagement, and effective policy measures is essential for the continued viability of coastal tourism destinations in the face of climate change. This comprehensive approach seeks to balance the interests of various stakeholders, ensuring the long-term ecological and socioeconomic sustainability of these invaluable areas.

### CONCLUSION

While tourists may not fully understand what climate change is or how it works, they are keenly aware of its consequences, according to the research. Climate change impacts Mangluru, Karnataka, mostly in the form of more frequent and severe weather extremes, but also in terms of tourist safety. The poll also found that local governments are very concerned about the impact of climate change on the tourism sector. Despite the lack of further efforts directly related to tourism, the adaptation strategy, such as the construction of a parapet wall surrounding Mangluru Beach, demonstrates that attention is being paid. The goal of this study is to increase awareness and understanding of the impacts of climate change among tourism sector stakeholders so that an adaptation plan can be developed and implemented more effectively and systematically. As a result, reducing the negative impacts of climate change on the site will encourage more tourists to visit. The tourism business, especially with regard to natural tourist locations, has to include climate change studies. If you are involved in planning or implementing tourism strategies that account for climate change adaptation, you may find the study's conclusions useful. Climate change has a major impact on people's choices about where to go on vacation. The tourism business has a direct positive impact on the local economy and community. Second, some words of wisdom for private sector and company owners. The private sector and municipal governments must collaborate on climate change programs and projects.

### REFERENCES

1. MacDonald, E. A Landscape . . . with Figures: Tourism and Environment on Prince Edward Island. *Acadiensis* 2011,40, 70–85.
2. Baldacchino, G. Islands and the Sea. In *The Palgrave Handbook of Blue Heritage*; Springer: Berlin, Germany, 2022; pp. 25–30.
3. Gothie, S.C. Playing “anne”: Red braids, green gables, and literary tourists on Prince Edward Island. *Tour. Stud.* 2016,16, 405–421.
4. MacDonald, E.; MacFadyen, J.; Novaczek, I. *Time and a Place: An Environmental History of Prince Edward Island*; McGill-Queen’s University Press: Halifax, NS, Canada, 2016; Volume 5.

5. MacDonald, E.; MacEachern, A. Rites of passage: Tourism and the crossing to Prince Edward Island. *Hist. Soc./Soc. Hist.* 2016, 289–306.
6. Baird, D.M. *Prince Edward Island National Park: The Living Sands*; Queen's Printer: Ottawa, ON, Canada, 2022.
7. Heung, B.; Keys, K.; Burton, D.L.; Lynch, D.H. *Soils of the Atlantic Provinces*; Canadian Society of Soil Science: Pinawa, MB, Canada, 2021.
8. Khirfan, L.; El-Shayeb, H. Urban climate resilience through socio-ecological planning: A case study in Charlottetown, Prince Edward Island. *J. Urban. Int. Res. Placemak. Urban Sustain.* 2020, 13, 187–212.
9. McIsaac, I. *Factors Influencing Change in the Prince Edward Island Lobster Fishery*; University of Prince Edward Island: Charlottetown, PE, Canada, 2021.
10. MacIntyre, J. *Agroecological Farming Methodologies as Climate Change Resilience on Prince Edward Island, Canada*; University of Guelph: Guelph, ON, Canada, 2021.
11. Walpole M. and H. Goodwin (2001), 'Local attitudes towards conservation and Tourism around Komodo National Park, Indonesia, *Environmental Conservation*, 28 (2): 160–6.
12. Farrell, B.H. and Twining-Ward, L. (2005) 'Seven steps towards sustainability: Tourism in the context of new knowledge', *Journal of Sustainable Tourism*, Vol. 13, No2, 109–122.
13. Fennel, David, A. (1999) *Ecotourism, an introduction, second edition*, Routledge, London and New York.
14. Gonzalez-Morales, O., Alvarez-Gonzalez, J. A., Sanfiel-Fumero, M. A., and Armas-Cruz, Y. (2016). *Governance, Corporate Social Responsibility, and Cooperation in Sustainable Tourist Destinations: The Case of Island of Fuerteventura*. Canada: Institute of Island Studies.
15. Gössling, S., Bredberg, M., Randow, A., Sandström, E., and Svensson, P. (2013): *Tourist Perceptions of Climate Change: A Study of International Tourists in Zanzibar*. London: Routledge.
16. Kountur, R. (2004). *The method for writing the thesis and thesis*. Jakarta: PPM.
17. Lise, W., & Tol, R. S. (2002). Impact of climate on tourist demand. *Climatic change*, 55(4), 429-449.
18. Maddison, D. (2001). In search of warmer climates? The impact of climate change on flows of British tourists. *Climatic change*, 49(1-2), 193-208.
19. NASA (2011). *What Are Climate and Climate Change?* [www.nasa.gov](http://www.nasa.gov). Diakses pada tanggal 4 Desember 2017
20. Simpson, M. (2013). *Impacts of climate change on tourism (and marine recreation)*. MCCIP.
21. Sookram, S. (2009). *The Impact of Climate Change on the Tourism Sector in Selected Caribbean Countries*. ECLAC.
22. UNWTO (2007). *Tourism and Climate Change Confronting the Common Challenge*. UNWTO Preliminary Consideration.
23. Weaver, D. (2011). Can sustainable tourism survive climate change?. *Journal of Sustainable Tourism*, 19(1), 5-15.
24. Wijaya, N. and Furqan, A. (2017). *Coastal Tourism and Climate-Related Disasters in an Archipelago Country of Indonesia: Tourists' Perspective*. Elsevier.