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Tourism development in national parks in the context of climate change: The case of U Minh Thuong national park, Kien Giang province

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Abstract:

Tourism is a sector that is most vulnerable to any changes. National parks in Vietnam as well as in the Mekong delta have a high potential for tourism development. However, under the impact of climate change, these national parks suffer from many negative effects. This article aims to analyse the current status of tourism development within the context of climate change in U Minh Thuong national park, Kien Giang province. The research was primarily conducted through a survey of 100 tourists and 30 local tourism businesses. The results demonstrate that U Minh Thuong national park serves as a tourist destination with abundant and diverse resources, alongside being the habitat and protected area of numerous rare plant and animal species. According to the analysis findings, climate change presents several challenges and impacts on tourism activities within U Minh Thuong national park, particularly concerning extreme weather conditions. The study also proposes several solutions to enhance the effectiveness of tourism development within the context of climate change in this national park.

***Keywords*: climate change, Kien Giang province, national park, tourism, U Minh Thuong.**

***Classification number:* 7**

1. Introduction

Vietnam's tourism industry currently aims to become a key economic sector [1]. In the first nine months of 2023, tourism revenue increased by 47.7% compared to the same period the previous year [2]. Vietnam is renowned for ecotourism and nature-based tourism, boasting a network of natural reserves and national parks abundant in natural resources, notably U Minh Thuong national park in Kien Giang province. With its unique ecological system, U Minh Thuong is globally recognised as a rare forest type, attracting numerous tourists. However, during the course of tourism development, U Minh Thuong national park faces various challenges, including those posed by climate change. Situated in the Mekong delta, U Minh Thuong national park is among the areas most profoundly affected by climate change. Furthermore, national parks and nature reserves are ecologically sensitive areas vulnerable to alterations in the environment.

Although extensive research has examined the effects of climate change on tourism globally, the focus has predominantly been on coastal, island, and mountainous regions [3-8]. Limited attention has been given to delta regions, particularly nature reserves within these areas, despite their heightened susceptibility to climate change. Previous studies have explored the impacts of climate change on national parks and conservation areas worldwide [9-13], yet there remains a gap in understanding how climate change affects tourism operations. In Vietnam, few studies have investigated the impact of climate change on the tourism industry. Some studies have discussed the impacts of climate change on the tourism industry in specific localities [14-17]. Thus, it is noteworthy that there are currently no studies, either domestically or globally, on the effects of climate change on tourism activities in the Mekong delta, particularly focusing on national parks and nature reserves.

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This study analyses tourism development in U Minh Thuong national park within the context of climate change. The research findings will enhance understanding of the challenges posed by climate change on tourism and propose suitable solutions to mitigate and address the consequences of climate change for tourism development in U Minh Thuong national park.

2. Literature review

In recent years, the term "climate change" has become commonplace, directly impacting life and the development of nations while threatening the Earth's environment and biodiversity. Notably, climate change significantly affects tourism development. The relationship between climate change and tourism has been subject to over 25 years of research. Adaptation measures to climate change in tourism have gained increased attention and are deemed urgent within the tourism industry [18, 19]. Since the 2000s, literature reviews have increasingly focused on the interplay between tourism and climate change [20]. This relationship can yield both positive and negative outcomes. Negatively, tourism activities such as transportation, entertainment, and accommodation can exacerbate climate change [21, 22]. Climate change can induce extreme weather events, loss of biodiversity, and alterations in ecosystems and landscapes, thereby complicating tourism activities. Conversely, tourism is viewed as a sector with potential to mitigate the impacts of climate change and even derive benefits from it [23]. For instance, tourism revenue can aid communities in better preparedness to tackle climate change. Climate change may also extend the summer season on subtropical beaches. However, the adverse effects of climate change outweigh the positive factors significantly.

In 2013, the Association of Southeast Asian Nations (ASEAN) released a report titled Framework, approaches, parameters, and measures for climate change and tourism in the Association of Southeast Asian Nations [24] to establish a basis for the tourism industry for countries to respond to climate change within the tourism sector. However, there has been limited progress in addressing the impacts of climate change on tourism in the region since then.

At the domestic level, the workshop "Assessing the impact of climate change on tourism in the South Central Coast" [25] stands out as a notable forum in this field to date. The workshop, featuring contributions from experts and research institutes, underscored the importance of assessing the impact of climate change on the tourism industry and recommended clear identification of current status and impacts, alongside proposals for region-specific and feasible solutions. However, there has been limited in-depth research on the impact of climate change on tourism activities in Vietnam, particularly within natural parks in the Mekong delta.

U Minh Thuong is designated as an important bird area in Vietnam [26, 27] and currently hosts some of the largest water bird colonies in the Mekong delta [28]. Recognised as a Ramsar site in 2015, it holds international wetland importance. Given its natural beauty and rich biodiversity, U Minh Thuong national park is emerging as a popular eco-tourist destination in the Mekong delta region. A report by the International Union for Conservation of Nature (IUCN) in 2019 highlighted the main climate hazards to U Minh Thuong national park, including prolonged and severe droughts, rising air temperatures, floods, and salinisation from sea level rise [29]. Extreme weather events such as heatwaves, storms, and erratic rainfall are also anticipated to occur more frequently, posing unpredictability. Vulnerability assessments indicate moderate to high vulnerability of the melaleuca forest and open swamps, while peat swamps are deemed extremely vulnerable. Additionally, some species are assessed as moderately to very highly vulnerable.

Scholarly attention has been drawn to tourism development in national parks and protected areas in the Mekong delta [30-33], and the impact of climate change on U Minh Thuong national park has been evaluated in various aspects [29, 34-36]. However, the impact of climate change on tourism within the national park remains unclear, a gap that this research aims to address through the case study of U Minh Thuong national park.

3. Methodology

This study was conducted from August 2022 to November 2022, employing mixed methods to achieve its objectives, which included document synthesis, field observation, and questionnaire survey. It aimed to examine both the supply side (tourism businesses) and the demand side (tourists) perspectives to evaluate the current state of climate change and tourism operations within the national park. Based on the needs identified from tourists and tourism businesses, suitable solutions for tourism development in the context of climate change were proposed.

A questionnaire survey was conducted in 2022 to gather data directly from 100 tourists and 30 tourism businesses at U Minh Thuong national park, employing the convenience sampling method (Tables 1, 2).

Table 1. Characteristic of surveyed visitors at U Minh Thuong national park (n=100).

Characteristic		Frequency	%
Gender	Male	56	56.0
	Female	44	44.0
Age	Under 25	45	45
	25-34	29	29
	35-44	17	17
	45-54	7	7
	Missing	2	2
Education level	Under high school	15	15.0
	High school	35	35.0
	Vocational/College	12	12.0
	Graduate/Post-graduate	37	37.0
	Missing	1	1.0
Income	Under 5,000,000 VND	29	29.0
	From 5,000,000 VND to under 10,000,000 VND	30	30.0
	From 10,000,000 VND to under 15,000,000 VND	28	28.0
	From 15,000,000 VND	10	10.0
	Missing	3	3.0
Place of residence	Urban	35	35
	Rural	65	65

Source: Survey result, 2022.

Table 2. Characteristic of surveyed tourism businesses at U Minh Thuong national park (n=30).

Characteristic		Frequency	%
Gender	Male	15	50.0
	Female	15	50.0
Age	25-34	9	30
	35-44	16	53.3
	45-54	1	3.3
	From 55	1	3.3
	Missing	3	10.0
Education level	Under high school	9	30.0
	High school	12	40.0
	Vocational/College	5	16.7
	Graduate and Post-graduate	3	10.0
	Missing	1	3.3
Working seniority	Under 5 years	3	10.0
	From 5 years to under 10 years	18	60.0
	From 10 years to under 15 years	8	26.7
	From 15 years	1	3.3

Source: Survey result, 2022.

Secondary data were compiled from various sources, including reports, scientific journals, and books relevant to the research issue. Additionally, the author group conducted fieldwork and observations at U Minh Thuong national park to experience local services and directly engage in discussions and surveys with tourists and business households.

4. Results and discussion

4.1. Tourism development at U Minh Thuong national park

U Minh Thuong national park is situated in An Minh Bac and Minh Thuan communes, U Minh Thuong district, Kien Giang province, with geographical coordinates ranging from 9°31'N to 9°39'N and from 105°03›E to 107°07'E. The park's functional subdivisions comprise 914 hectares for strictly protected areas, 6,924 hectares for ecological restoration, 200 hectares for historical and monument conservation, 59.4 hectares for buffer zone planning, and 59.4 hectares for administrative and service purposes [37].

With its unique ecosystem of alum-flooded Melaleuca forest on peat soil, U Minh Thuong national park serves as a destination for tourism and research, showcasing natural processes of Melaleuca and peat forests, conservation solutions, and the distribution of diverse bird sanctuaries, migratory birds, and water birds. Favoured by nature as the habitat for many rare species of flora and fauna, the park boasts a diverse species composition and is rigorously conserved to uphold biodiversity. Visitors to U Minh Thuong national park can enjoy fresh air, spacious surroundings, and immerse themselves in scenery teeming with rare flora and fauna, including observation towers and the Hoa Mai lake fishing area. Attractions such as bird arrays, crow bat arrays, primary melaleuca forests, wild boar populations, otters, and monitor lizards offer abundant sightseeing opportunities.

Attraction plays a pivotal role in a tourist destination, often determining visitors' decisions to visit. A survey of 100 tourists evaluated the attractiveness of tourism resources at U Minh Thuong national park using a 5-level scale and statistical averaging, yielding a value of 3.53 out of 5. This indicates that tourism resources at the park have achieved a satisfactory level of attractiveness, crucial for current and future tourism development.

Endowed with natural resources, U Minh Thuong national park has fostered eco-tourism, community tourism, and experiential tourism to enable tourists to explore and learn about local culture, collaborate with locals, and directly engage in activities. Tourist activities such as fishing, fruit harvesting, and cooking traditional dishes with hosts, as well as participating in traditional music performances with "farmer artists," promote environmental awareness, cultural preservation, and historical relic conservation. These activities leverage biodiversity, landscape, and environmental values while facilitating cultural exchange between residents and tourists, thereby creating employment opportunities for locals and enhancing their quality of life.

A survey of 100 respondents revealed that the majority (67%) perceived the development of U Minh Thuong national park as "normal," followed by "good" (21%), "very good" (5%), "poor" (5%), and the lowest being "very poor" (2%). This suggests that tourism activities at U Minh Thuong national park have yet to achieve significant prominence.

After employing statistical averaging, the results of a survey of 100 tourists regarding tourism development at U Minh Thuong national park yielded an average value of 3.22 out of 5, indicating that local tourism is currently operating at a moderate level. Thus, there is a need for more prominent development policies to leverage the park's potential and foster further development.

4.2. Current status of environmental protection and awareness of climate change

U Minh Thuong national park stands as one of three core zones within the Kien Giang biosphere reserve and ranks as the second-largest biosphere reserve among Vietnam's eight UNESCO-recognised biosphere reserves. To ensure its protection, the national park Management Board has implemented numerous measures to prevent and combat forest fires, alongside bolstering the conservation of plant communities and bird habitats. Remarkably, many rare bird species, including Javanese storks, white storks, and dwarf fire storks, have exhibited rapid growth in numbers compared to previous years.

In addition to forest protection initiatives, increasing emphasis has been placed on environmental education. The primary objective is to raise community awareness, fostering appropriate attitudes and behaviours towards the natural environment, and encouraging active community participation in national park conservation efforts.

Subsequently, the U Minh Thuong national park management board has conducted various training courses and public awareness campaigns within the buffer zone to promote forest environmental protection. These efforts have yielded significant results, with a notable reduction in fishing and exploitation activities within the park's core area. Regular dissemination of laws to local residents and tourists aimed at enhancing awareness of forest protection, development, and biodiversity conservation is conducted through diverse content and methods. A survey on environmental sanitation involving 100 tourists at U Minh Thuong national park produced the following results (Table 3).

Table 3. Visitors' assessment of environmental sanitation at U Minh Thuong national park (n=100).

Assessment	N	Min	Max	Mean
The restroom is clean	100	1	5	3.08
There is no rubbish outside	100	2	5	3.71
The water source is not polluted	100	1	5	2.46

Source: Survey result, 2022.

Regarding restroom cleanliness, it received an average score of 3.08, indicating that the toilets at U Minh Thuong national park may not be sufficiently clean to meet tourist needs. Presently, there are only two toilets available at the park, one situated near Hoa Mai lake and the other near the national park's media centre. Although both toilets feature separate sections for men and women, they are relatively small and have shown signs of deterioration over time.

The issue of waste management and litter received an average score of 3.71, suggesting that waste management is adequately enforced at U Minh Thuong national park. Trash bins are strategically placed throughout the park, resulting in minimal litter, ensuring visitors' comfort and security during their visit. Furthermore, heightened awareness among tourists and staff regarding environmental sanitation ensures effective management of this issue without disrupting tourism activities.

Regarding water resources, the average score was 2.46, indicating concerns over water pollution at U Minh Thuong national park. Visitors perceive the water environment, particularly in canals and lakes, as tainted due to the dark colouration caused by fallen melaleuca leaves over time. This discolouration, coupled with the odour from decomposing cajuput leaves, creates an unpleasant environment, leading visitors to feel uneasy about the water sources within the park.

Observations and insights from local tourism businesses suggest an ineffective approach to educating the public about climate change. Specifically, out of 30 respondents from tourism businesses, only 20% reported attending conferences or training sessions on climate change, while 80% had not. Although conference programmes on climate change have been conducted, they have failed to attract a diverse range of participants. A survey of households engaged in tourism businesses within or near U Minh Thuong national park revealed minimal participation in such activities.

Of the 30 businesses surveyed, only 30% believe that the government has made sufficient efforts to enhance public understanding of climate change. This underscores the necessity for greater involvement of local government in climate change awareness programmes, training sessions, and conferences.

In response to queries seeking a deeper understanding of the causes and challenges in raising public awareness, the results were shown in Table 4. 25 out of 30 respondents (83.3%) identified lack of funding as a significant challenge, while 24 respondents (80%) cited insufficient personnel. Additionally, 23.3% attributed the difficulty in this endeavour to a lack of interest.

Table 4. Assessment of tourism businesses on difficulties in raising people's awareness about climate change (n=30).

Reason / Opinion	Lack of funding	Lack of personnel	Lack of interest
Yes	83.3%	80%	23.3%
No	16.7%	20%	76.6%
Total	100%	100%	100%

Source: Survey result, 2022.

Since there was a shortage of financing and staff to support widespread implementation, local authorities made efforts to increase public awareness of climate change but did not achieve optimal outcomes. Additionally, some businesses have refrained from engaging in suggested activities due to apathy. Besides the national park management board, tourism businesses within the national park play a vital role in implementing climate change response plans. Therefore, localities should undertake more community awareness initiatives on environmental protection and climate change adaptation.

4.3. Assessment of visitors and tourism businesses regarding the impact of climate change on tourism development in U Minh Thuong national park

A survey of 100 tourists and 30 tourism businesses at U Minh Thuong national park was conducted to evaluate the impact of climate change factors on tourism development. The results are presented in Tables 5, 6.

Table 5. Visitors' assessment of the impact of factors on tourism development at U Minh Thuong national park (n=100).

Factor / Respond	Storm	Flood	Salinisation	Rising temperature	Erratic rain	Sea level rise
Yes	72	22	10	74	66	7
No	28	78	90	26	34	93
Total	100	100	100	100	100	100

Source: Survey result, 2022. Unit: %.

Table 6. Tourism businesses' assessment of the impact of factors on tourism development at U Minh Thuong national park (n=30).

Factor / Respond	Storm	Flood	Salinisation	Rising temperature	Erratic rain	Sea level rise
Yes	87	30	20	73	63	10
No	13	70	80	27	37	90
Total	100	100	100	100	100	100

Source: Survey result, 2022. Unit: %.

Climate change has become a matter of great concern, especially within national parks, necessitating careful attention to promptly grasp the actual situation and devise effective preventive solutions to minimise impacts on business activities.

Storm: Storm movements have recently posed significant challenges due to their considerable effects on various businesses, including tourism. Storms cause substantial damage, both physical and psychological. Presently, storms are a deep concern across all sectors, especially within the tourism sector in national parks, notably U Minh Thuong national park in Kien Giang province. Survey results on climate change's impact on tourism activities in U Minh Thuong national park reveal that 72% of surveyed tourists and 87% of surveyed tourism businesses believe that storm factors impact tourism development in the park. A significant proportion of respondents acknowledge the adverse impact of storms on tourism activities, necessitating further study to minimise their detrimental effects. It is crucial to pay attention to storm impacts to avoid unnecessary damage, especially concerning long-term park development.

Salinisation: Salinisation remains a persistent concern in coastal areas, particularly in Kien Giang province, requiring effective remedies to mitigate its effects. The presence of dikes and dams surrounding U Minh Thuong national park helps mitigate salinisation's impact on tourism activities. Visitors can feel reassured knowing that a robust water regulation system is in place to address salinisation issues. Furthermore, according to the U Minh Thuong national park management board, the spongy peat layer here has formed over thousands of years, remaining uncontaminated by salinity or alum and boasting high water-holding capacity, facilitating substantial water storage in conjunction with surface water and nearby canal and ditch systems [29, 38].

The survey revealed that only 10% of tourists and 20% of tourism businesses believe that salinisation affects tourism activities at the park, with some attributing discoloured water in Hoa Mai lake and canals to fallen Melaleuca leaves, which could be mistaken for saltwater. Clarifying this issue through a survey of 30 tourism businesses at U Minh Thuong national park revealed no instances of salinisation affecting tourism activities. Long-standing businesses at U Minh Thuong national park are familiar with the area's water resources and are satisfied with the effective dike system, which significantly reduces salinisation effects, facilitating seamless tourism activities. The rigorous attention of the management agency ensures strict control over water sources. Consequently, tourism activities here are largely unaffected by salinisation, owing to the stability of the water regulation and dike system, thereby minimising salinisation's impact on tourism development in U Minh Thuong national park.

Rising temperatures and drought: Survey results indicate that 74% of tourists and 73% of tourism businesses believe that rising temperatures affect tourism activities at U Minh Thuong national park, highlighting the significant challenge posed by rising temperatures. Respondents attribute increased heat to impacting tourism and leisure activities, with rising temperatures also adversely affecting local flora and fauna, potentially leading to ecological imbalances. Various factors contribute to rising temperatures, with human activities such as emissions, untreated wastewater, and deforestation exacerbating the issue. Given the profound impact and serious consequences of rising temperatures,

heightened attention and collective efforts are crucial to mitigate their effects on development, particularly tourism, in U Minh Thuong national park.

Forest fires pose a significant threat to the biodiversity of U Minh Thuong national park, particularly during the dry season when low canal water levels expose flammable peat layers [39]. Consequently, preventing drought and forest fires remains a top priority. The park has implemented and adhered to rigorous forest fire prevention measures. According to interviews with the U Minh Thuong national park management board [40, 41], the park is closed during the annual dry season (from late April to mid-July) to conduct forest fire prevention activities, strictly adhering to forest fire prevention protocols to safeguard park resources and facilities.

Erratic and heavy rain: Erratic and heavy rains disrupt the experience and travel plans of tourists, diminishing their interest in visiting. The survey revealed that 66% of tourists and 63% of tourism businesses believe that erratic heavy rain affects tourism activities at U Minh Thuong national park, indicating a level of concern regarding this factor.

Erratic heavy rain poses an inevitable challenge for destinations with humid tropical monsoon climates, significantly impacting tourists' visits and the landscape and tourism development at U Minh Thuong national park. Prolonged rainfall in Melaleuca forests impedes water drainage, harming tree growth and survival. Moreover, heavy rainfall may cause tree falls, disrupting drainage and electricity systems, negatively impacting tourism in the area.

Businesses engaged in trade, transportation, food, and accommodation may incur losses on days of severe rain due to minimal or no visitors. The significant impact of erratic heavy rain necessitates heightened attention and careful preparation to minimise harm to U Minh Thuong national park and its tourism activities. Tourists often plan detailed itineraries with specific timings, but unexpected and sudden rains can delay their plans, making them uncomfortable and dissatisfied with their visit.

Sea level rise: Vietnam is among the five countries in the world significantly affected by sea level rise. Situated in Kien Giang province along the coast, U Minh Thuong national park actively manages sea level rise to prevent adverse effects, crucial for sustainable development in the area.

In a survey assessing the impact of sea level rise on tourism activities at U Minh Thuong national park, only 7% of tourists and 10% of tourism businesses believed that sea level rise affects tourism activities at the park, indicating minimal impact. The comprehensive dike system surrounding U Minh Thuong national park minimises the impact of sea level rise, facilitating smooth tourism activities without compromising visitor experiences. The diligent monitoring and control of water levels contribute to the seamless operation of tourism activities, showcasing the effectiveness of the park's management board in implementing remedial measures.

Visitors experience increased satisfaction and security during their visits, explorations, and tourism services, as the solid dike system prevents any hindrance from sea level rise. Additionally, the dense layer of peat, combined with tightly sealed coverage, offers further protection against the effects of sea level rise.

Floods: Concerning the impact of floods, 22% of surveyed tourists and 30% of surveyed tourism businesses believed that flood factors affect tourism development at U Minh Thuong national park. This suggests that tourism operations at the park are not significantly affected by flood factors. It can be inferred that floods are not a considerable concern for tourism development or the return intention of tourists to U Minh Thuong national park, as observed at a low level. Although heavy rainfall, prolonged storms, and high tides may lead to localised flooding at certain times of the year, tourism operations at U Minh Thuong national park remain largely unaffected if water level regulation is well managed.

4.4. Proposals and recommendations for tourism development in the context of climate change

In order to attract tourists and ensure long-term development, it is imperative not only to make new investments but also to preserve existing resources. Therefore, priority should be given to promoting afforestation and regeneration activities, restoring and

developing existing forest resources, and continuously improving the quality and coverage of forests. Deforestation or the exploitation and trading of forest goods and wildlife must be strictly prohibited.

Simultaneously, the management board should regularly monitor forest hydrology, forecast the risk of forest fires, and proactively regulate water levels to prevent forest fires while maintaining suitable habitat for the growth and development of Melaleuca forests.

Furthermore, it is necessary to strengthen inspection and prepare scenarios to respond to natural disasters and climate change locally. Proactive planning is essential to ensure safety for tourists, and operations should be halted resolutely if there is any risk to safety. Research indicates that extreme weather phenomena due to climate change, such as erratic and prolonged rain, extreme heat, or storms, directly affect tourism activities in the area. Therefore, immediate solutions are required, including upgrading infrastructure to withstand harsh weather conditions, and designing and installing rain and sun shelters for visitors.

While respondents consider phenomena such as salinisation, floods, and sea level rise to have less serious consequences on tourism activities due to the effective dike and sluice system, attention needs to be paid to controlling and regulating water levels because the wetland ecosystem in U Minh Thuong national park is highly vulnerable.

Promoting the application of science and technology in managing and monitoring the natural environment in tourism is imperative. Investing in completing and upgrading the system of monitoring stations to monitor environmental quality, especially focusing on tourist density, is essential. An automatic monitoring system for water level and quality will identify problems (if any) and provide timely solutions.

Additionally, solutions to build environmentally friendly tourism development models, such as eco-tourism and tourism associated with the conservation of natural resources, should be implemented. Encouraging and applying the 3R models (Reduce - Recycle - Reuse) can contribute to sustainable tourism practices.

Efforts to raise awareness about the harmful effects of climate change in U Minh Thuong national park require readiness and practical action from the community, businesses, visitors, and management agencies. Local authorities should conduct more public awareness-raising initiatives, including training programs, propaganda, and seminars about how climate change affects the tourism sector.

5. Conclusions

The research findings on the current status of tourism and climate change at U Minh Thuong national park, Kien Giang province, underscore its significance as a tourist destination boasting attractive, rich, and diverse resources. It serves as a habitat and sanctuary for numerous rare flora and fauna species. However, its development remains at a normal level, not fully leveraging its abundant tourism potential. Presently, tourism activities in U Minh Thuong national park predominantly exhibit characteristics of mass tourism. Therefore, there is a need to focus on developing tourism that capitalises on the unique features of the park while highlighting the strengths of its natural resources and environment based on principles of conservation and sustainability. This will contribute to creating a distinct tourism experience at U Minh Thuong national park. Moreover, investment funding for tourism development, human resource training, and particularly climate change awareness education remain insufficient. Challenges persist in tourism advertising, promotion, and infrastructure development, as well as in enhancing entertainment, beverage, and accommodation services. Addressing these issues effectively requires targeted investment and strategic development initiatives.

Amidst the increasingly evident and potent impact of climate change in the Mekong delta, U Minh Thuong national park faces numerous challenges in its tourism operations, notably extreme weather phenomena such as storms, erratic rainfall, and rising temperatures. These manifestations underscore the direct challenges posed to tourism activities in the park. While factors such as sea level rise, floods, and salinisation have not significantly impacted tourism, measures of prevention, such as the dike system, have been implemented by U Minh

Thuong national park and local management boards. However, the perception of tourism businesses in the park regarding climate change and its impacts remains limited, potentially leading to a subjective approach in addressing climate change. Therefore, there is a critical need to enhance monitoring of climate change impacts and intensify propaganda and awareness-raising efforts.

To address these limitations, further attention, in-depth research, and enthusiastic coordination and support from management agencies are essential. Collaborative efforts are needed to study and propose appropriate solutions that contribute to tourism development in U Minh Thuong national park.

CRediT author statement

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COMPETING INTERESTS

The authors declare that there is no conflict of interest regarding the publication of this article.

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