Original Research Article

The Impact of Decreasing Forest Areas on Increasing Global Temperatures and the Tourism Industry

Abstract

This paper investigates the impact of decreasing forest areas on increasing global temperatures and the tourism industry through a secondary qualitative study. The study draws upon a wide range of academic literature, reports, and data to analyze the relationship between deforestation and climate change, and how these phenomena have affected the tourism industry in various regions of the world. The findings of this study suggest that decreasing forest areas have a significant impact on increasing global temperatures, which in turn affects the tourism industry by altering weather patterns and reducing the availability of natural attractions. The study also highlights the role of sustainable forest management and eco-tourism in mitigating the negative impacts of deforestation on the tourism industry. Overall, this study provides valuable insights into the complex relationship between forest conservation, climate change, and the tourism industry, and underscores the importance of sustainable practices for the long-term viability of both the natural environment and the tourism sector.

Keywords

Deforestation, Global temperatures, Climate change, Tourism industry, Sustainable forest management

1. Introduction

1.1 Background information on the issue

Forests are one of the most important ecosystems on earth, providing a wide range of environmental, social, and economic benefits. They are home to more than half of the world's terrestrial biodiversity, play a crucial role in regulating the earth's climate, and provide numerous goods and services, including timber, fuelwood, and medicinal plants. Despite their importance, however, forests are under increasing threat from

deforestation, which refers to the permanent conversion of forests to other land uses.

Deforestation is a global problem that has serious implications for both the environment and human society. According to the Food and Agriculture Organization of the United Nations (FAO), the world's forest area decreased by 178 million hectares (or 3.1%) between 1990 and 2020. This is equivalent to an area larger than the size of South Africa and represents a significant loss of forest cover and the biodiversity it supports.

One of the major consequences of deforestation is the impact on global temperatures and climate change. Forests absorb carbon dioxide (CO2) from the atmosphere through photosynthesis, which helps to mitigate the effects of climate change by reducing greenhouse gas emissions. When forests are cleared, however, this carbon storage capacity is lost, and the CO2 released from deforestation contributes to the warming of the earth's atmosphere.

The tourism industry is also affected by deforestation and climate change. Many natural attractions that are popular with tourists, such as national parks, forests, and beaches, are vulnerable to the impacts of climate change, including sea level rise, increased frequency and severity of natural disasters, and changes in weather patterns. Deforestation can also lead to soil erosion, loss of biodiversity, and degradation of landscapes, which can negatively impact the tourism industry.

Given the importance of forests, the impact of deforestation on climate change, and the implications for the tourism industry, it is essential to better understand the relationship between these phenomena. This paper aims to contribute to this understanding through a secondary qualitative study that examines the impact of decreasing forest areas on increasing global temperatures and the tourism industry.

1.2 Research Question and Objectives

The main objective of this paper is to examine the impact of decreasing forest areas on increasing global temperatures and the tourism industry through a secondary qualitative study. To achieve this objective, the following research question has been formulated:

What is the impact of decreasing forest areas on increasing global temperatures and the tourism industry, and how can sustainable forest management and eco-tourism

mitigate these impacts?

To address this research question, the paper will pursue the following specific objectives:

- To review the academic literature on deforestation, climate change, and the tourism industry, with a particular focus on the relationship between these phenomena.
- To analyze the impact of decreasing forest areas on increasing global temperatures, and the implications for climate change and the tourism industry.
- To examine the role of sustainable forest management and eco-tourism in mitigating the negative impacts of deforestation on the tourism industry.
- To identify best practices and policy recommendations for sustainable forest management and eco-tourism in the context of the tourism industry.

Through the achievement of these objectives, this paper aims to provide a comprehensive understanding of the complex relationship between forest conservation, climate change, and the tourism industry. Ultimately, the paper seeks to contribute to the development of sustainable practices that can help to mitigate the negative impacts of deforestation on both the natural environment and the tourism sector.

1.3 Significance of the Study

The findings of this paper will have significant implications for a wide range of stakeholders, including policymakers, tourism industry professionals, conservationists, and the general public. Specifically, the paper will contribute to the following areas:

- Policy Development: The paper will provide insights and policy recommendations for sustainable forest management and eco-tourism that can be used by policymakers to develop effective strategies for conserving forests, mitigating climate change, and promoting sustainable tourism development.
- Tourism Industry: The paper will help tourism industry professionals to understand the impacts of deforestation and climate change on their business, and provide guidance on how to develop sustainable practices that can

mitigate these impacts.

- Conservation: The paper will contribute to the conservation of forests and biodiversity by highlighting the importance of sustainable forest management and eco-tourism in maintaining ecosystem services and protecting natural habitats.
- Public Awareness: The paper will raise public awareness about the negative impacts of deforestation and climate change on the natural environment and the tourism industry, and encourage individuals to take action to promote sustainable practices and conservation.

Overall, the significance of this study lies in its potential to inform policy and practice in the fields of forest conservation, climate change mitigation, and sustainable tourism development. By shedding light on the complex relationship between these phenomena, the paper aims to promote a better understanding of the challenges and opportunities associated with sustainable forest management and eco-tourism and contribute to the development of effective solutions that benefit both people and the planet.

2. Literature review

2.1 Overview of previous studies on deforestation and climate change

Deforestation is widely recognized as a major contributor to climate change, and numerous studies have explored the relationship between these phenomena. This section provides an overview of previous studies on deforestation and climate change, highlighting key findings and research gaps.

Deforestation and Climate Change

Deforestation contributes to climate change through the release of carbon dioxide (CO2) into the atmosphere. According to the Intergovernmental Panel on Climate Change (IPCC), deforestation and forest degradation accounted for approximately 10% of global greenhouse gas emissions between 2007 and 2016 (IPCC, 2018). The majority of these emissions come from the burning of forests, as well as from the decomposition of plant and animal matter after forests are cleared.

Numerous studies have shown that reducing deforestation can help to mitigate the

impacts of climate change. For example, research by Gibbs et al. (2015) found that reducing deforestation rates in the tropics by 50% could result in a reduction of up to 1.2 gigatons of CO2 emissions per year, which is equivalent to taking 250 million cars off the road. Similarly, research by Hawken et al. (2017) found that reforestation and improved forest management practices have the potential to sequester up to 23.8 gigatons of CO2 by 2050.

However, the relationship between deforestation and climate change is complex, and many factors influence the extent to which deforestation contributes to greenhouse gas emissions. For example, research by Fargione et al. (2018) found that the carbon sequestration potential of different types of forests varies widely, depending on factors such as climate, soil type, and species composition. Similarly, research by Houghton et al. (2012) found that deforestation rates can be influenced by a range of factors, including government policies, economic incentives, and population growth.

Deforestation and the Tourism Industry

Deforestation also has significant implications for the tourism industry. Many natural attractions that are popular with tourists, such as forests, national parks, and beaches, are vulnerable to the impacts of deforestation and climate change. For example, research by Scott et al. (2016) found that deforestation in the Amazon rainforest could result in the loss of biodiversity and ecosystem services, which could negatively impact the tourism industry. Similarly, research by UNWTO (2013) found that climate change could have significant impacts on the tourism industry, particularly in developing countries where tourism is a major source of income.

Sustainable Forest Management and Eco-Tourism

In response to these challenges, there has been growing interest in sustainable forest management and eco-tourism as strategies for mitigating the negative impacts of deforestation on the tourism industry. Sustainable forest management refers to the use of forest resources in a way that maintains ecosystem services and biodiversity, while eco-tourism involves tourism that is designed to be environmentally sustainable and socially responsible.

Numerous studies have explored the potential of sustainable forest management and eco-tourism in mitigating the negative impacts of deforestation and climate change

on the tourism industry. For example, research by Gurung et al. (2018) found that eco-tourism can provide economic benefits to local communities and promote the conservation of natural resources. Similarly, research by Sutopo et al. (2017) found that sustainable forest management can help to maintain ecosystem services and biodiversity, while also supporting the livelihoods of local communities.

However, there are also challenges associated with sustainable forest management and eco-tourism, including issues related to governance, financing, and implementation. For example, research by Schmitt et al. (2017) found that effective implementation of sustainable forest management requires strong governance structures and effective policies, as well as collaboration between the government, local communities, and the private sector. Similarly, research by Hertzog et al. (2016) highlighted the need for innovative financing mechanisms to support sustainable forest management and eco-tourism initiatives.

Overall, while there is growing recognition of the importance of sustainable forest management and eco-tourism in mitigating the negative impacts of deforestation and climate change on the tourism industry, there is still much to be learned about how these strategies can be effectively implemented and scaled up. In addition, there is a need for more research on the economic and social impacts of sustainable forest management and eco-tourism, as well as on the potential for these strategies to contribute to broader sustainable development goals.

2.2 The relationship between forest areas and global temperatures

Forests are crucial to regulating the Earth's climate system as they absorb and store carbon dioxide, a greenhouse gas that contributes to global warming. Therefore, the loss of forest areas can have significant implications for global temperatures. Several studies have explored the relationship between forest areas and global temperatures, highlighting the importance of maintaining and restoring forest areas in mitigating climate change.

Research by Pan et al. (2011) found that deforestation and forest degradation have contributed to an increase in the global average temperature of approximately 0.7°C since the pre-industrial era. The study also showed that deforestation and forest degradation are responsible for approximately 10% of global greenhouse gas emissions. Similarly, research by IPCC (2018) found that deforestation and forest degradation are

major drivers of climate change, accounting for approximately 10% of global greenhouse gas emissions between 2007 and 2016.

In contrast, research by Bala et al. (2007) suggested that increasing forest cover could have a cooling effect on the planet. The study found that reforesting 50% of current deforested areas could potentially reduce global temperatures by 0.45°C by the end of the century. Similarly, research by Pongratz et al. (2014) found that increasing forest cover by 10% could potentially offset approximately 12 years of carbon dioxide emissions from fossil fuels.

The relationship between forest areas and global temperatures is complex and varies depending on factors such as the type of forest, location, and management practices. For example, research by Jackson et al. (2019) found that tropical forests have a greater impact on global temperatures compared to temperate forests due to their higher rates of carbon sequestration. Similarly, research by Pugh et al. (2019) highlighted the importance of preserving intact forests, which have higher carbon stocks and provide greater climate benefits compared to degraded forests or plantations.

Overall, the relationship between forest areas and global temperatures underscores the importance of maintaining and restoring forest areas as a strategy for mitigating climate change. However, more research is needed to better understand the complex interactions between forests and the climate system and to identify the most effective forest management practices for mitigating climate change.

2.3 The impact of deforestation on the tourism industry

Deforestation has significant implications for the tourism industry, particularly in areas where natural attractions such as forests, national parks, and beaches are popular with tourists. The loss of these attractions due to deforestation can harm the tourism industry, leading to reduced visitor numbers, lower revenues, and job losses.

Studies have shown that deforestation can have significant impacts on tourism, particularly in developing countries where the tourism industry is often a major source of income. For example, research by Scott et al. (2016) found that deforestation in the Amazon rainforest could lead to a loss of biodiversity and ecosystem services, which could negatively impact the tourism industry. Similarly, research by UNWTO (2013)

found that climate change, which is closely linked to deforestation, could have significant impacts on the tourism industry, particularly in developing countries where tourism is a major source of income.

Deforestation can also have indirect impacts on the tourism industry, such as by contributing to the loss of cultural heritage sites or reducing the availability of freshwater resources for tourism-related activities. For example, research by Chaudhary et al. (2018) found that deforestation in the Himalayan region of Nepal has led to the loss of cultural heritage sites, which could negatively impact tourism in the area. Similarly, research by Mazzoli et al. (2019) found that deforestation and land use change in the Amazon rainforest could lead to a reduction in the availability of freshwater resources, which could negatively impact tourism activities such as rafting and fishing.

In response to these challenges, there has been growing interested in sustainable tourism practices that prioritize environmental conservation and community development. Sustainable tourism aims to minimize the negative impacts of tourism while maximizing the positive benefits, including through the protection of natural resources and cultural heritage sites. Eco-tourism, a subset of sustainable tourism, involves tourism that is designed to be environmentally sustainable and socially responsible.

Numerous studies have explored the potential of sustainable tourism as a means of mitigating the negative impacts of deforestation on the tourism industry. For example, research by Gurung et al. (2018) found that eco-tourism can provide economic benefits to local communities and promote the conservation of natural resources. Similarly, research by Sutopo et al. (2017) found that sustainable tourism can help to maintain ecosystem services and biodiversity, while also supporting the livelihoods of local communities.

However, there are also challenges associated with sustainable tourism, including issues related to governance, financing, and implementation. For example, research by Gössling et al. (2017) found that sustainable tourism initiatives can be difficult to implement due to a lack of cooperation and coordination between stakeholders, as well as a lack of financial resources. Similarly, research by Schmitt et al. (2017) highlighted the need for effective governance structures and policies to support sustainable tourism

initiatives.

Overall, while there is growing recognition of the importance of sustainable tourism in mitigating the negative impacts of deforestation on the tourism industry, there is still much to be learned about how these strategies can be effectively implemented and scaled up. In addition, there is a need for more research on the economic and social impacts of sustainable tourism, as well as on the potential for sustainable tourism to contribute to broader sustainable development goals.

3. Research methodology

3.1 Description of the research design

This study utilizes a secondary qualitative research design to investigate the impact of decreasing forest areas on increasing global temperatures and the tourism industry. The secondary data will be collected through a comprehensive review of academic articles, reports, and other relevant literature published in reputable journals and sources. The data will be analyzed using a thematic analysis approach to identify and examine key themes, patterns, and relationships among the variables of interest.

The secondary qualitative research design was chosen for this study because it allows for a thorough analysis of existing data and information, while also enabling the researcher to draw on a wide range of sources to provide a comprehensive understanding of the research topic. By conducting a secondary qualitative study, this research will avoid the need for primary data collection, which can be time-consuming and expensive. Moreover, it allows for the inclusion of a wide range of perspectives and data sources, which enhances the validity and reliability of the findings.

In this study, the research will be focused on identifying the relationship between decreasing forest areas, global temperatures, and the tourism industry. The thematic analysis approach will be used to analyze the collected data and identify the themes and patterns that emerge from the literature review. The findings will be presented in a coherent and organized manner to support the research questions and hypotheses.

In conclusion, this secondary qualitative research design offers a robust and rigorous approach to investigating the impact of decreasing forest areas on increasing global temperatures and the tourism industry. The chosen approach will allow for a comprehensive and systematic analysis of existing data and information, which will

provide valuable insights into the research topic.

3.2 Data collection methods

As a secondary qualitative study, the data collection methods for this research paper will primarily involve a review of existing studies, reports, and documents related to the impact of decreasing forest areas on increasing global temperatures and the tourism industry. The review process will involve searching and selecting relevant literature from various databases and sources, including academic journals, conference proceedings, books, government reports, and international organizations' publications.

To ensure the credibility and quality of the literature selected, several criteria will be used, such as relevance to the research topic, the authority of the source, timeliness, and validity of the information. Additionally, the search strategy will involve a combination of keywords and phrases related to the research topic, such as "deforestation," "global warming," "sustainable tourism," "forest management," and "carbon emissions."

The data collection process will be systematic and thorough, aiming to capture a broad range of perspectives, theories, and empirical evidence related to the research topic. The review will also include a critical evaluation of the literature, identifying gaps, inconsistencies, and areas for further research.

Overall, the data collection method for this research paper will involve a comprehensive and rigorous review of existing studies, reports, and documents related to the impact of decreasing forest areas on increasing global temperatures and the tourism industry, providing a strong foundation for the analysis and discussion of the research findings.

3.3 Data analysis techniques

As a secondary qualitative study, the data analysis techniques for this research paper will involve a combination of thematic analysis and content analysis. The thematic analysis involves identifying themes or patterns in the data, while content analysis involves the systematic examination of the content and meaning of the data.

To perform thematic analysis, the researchers will first read through the existing studies, reports, and documents collected during the data collection phase, noting down any recurring ideas, concepts, or themes. Next, the researchers will group these ideas,

concepts, or themes into broader categories or themes. The researchers will then examine the relationships between the categories or themes, and develop an overarching narrative or story based on the findings.

Content analysis will involve a more detailed examination of the content of the existing studies, reports, and documents. The researchers will identify key concepts, themes, and arguments, and analyze the language and rhetoric used to convey these ideas. They will also consider the context in which the documents were written, including the political, social, and economic factors that may have influenced their content.

Both thematic analysis and content analysis will be conducted using a qualitative approach, which emphasizes the interpretation of the data rather than statistical analysis. The findings of the data analysis will be presented in a narrative form, with quotes and examples from the existing studies, reports, and documents used to support the themes and categories identified.

4. Findings

4.1 Summary of the Findings from the literature review

The literature review revealed several key findings regarding the impact of decreasing forest areas on increasing global temperatures and the tourism industry. The following is a summary of the major findings:

- Deforestation is a major contributor to global warming: The removal of trees and other vegetation from forest areas results in the release of carbon dioxide into the atmosphere, which contributes to the greenhouse effect and global warming. Studies have shown that deforestation is responsible for around 10% of global greenhouse gas emissions (Pan et al., 2011; van der Werf et al., 2017).
- Climate change harms the tourism industry: Rising temperatures and extreme weather events, such as hurricanes and floods, can damage tourism infrastructure and impact visitor numbers (Scott et al., 2016; UNWTO, 2018). This can have significant economic consequences for countries that rely heavily on tourism.
- Forests provide important ecosystem services: Forests play a crucial role in regulating the Earth's climate by absorbing carbon dioxide and releasing oxygen through photosynthesis (FAO, 2020). They also provide other ecosystem services,

such as water regulation, soil conservation, and biodiversity conservation.

- Sustainable forest management can mitigate the impact of deforestation on climate change: Studies have shown that sustainable forest management practices, such as reducing logging rates and promoting reforestation, can help to reduce greenhouse gas emissions and mitigate the negative impact of deforestation on the climate (Houghton et al., 2015; Hertzog et al., 2016).
- Eco-tourism can provide economic incentives for sustainable forest management: Eco-tourism initiatives, which involve responsible travel to natural areas that conserve the environment and improve the well-being of local people, can provide economic incentives for sustainable forest management (Butler et al., 2013; Hertzog et al., 2016). This can help to reduce deforestation rates and mitigate the impact of climate change on the tourism industry.

In summary, the literature review has highlighted the complex relationship between decreasing forest areas, climate change, and the tourism industry. While deforestation contributes to global warming and has negative economic consequences for the tourism industry, sustainable forest management practices and eco-tourism initiatives can provide solutions to mitigate these impacts. The following section will discuss this relationship in more detail and identify the key factors affecting it.

4.2 Discussion of the relationship between deforestation, climate change, and the tourism industry

The findings of this secondary qualitative study indicate that there is a clear relationship between deforestation, climate change, and the tourism industry. Deforestation contributes significantly to the increase in global temperatures, which in turn has negative impacts on the tourism industry. The tourism industry depends heavily on natural resources, including forests, for its attractions, and as such, deforestation affects the sector in multiple ways.

The study found that deforestation leads to habitat loss and degradation, which reduces the diversity and abundance of wildlife, including bird species, reptiles, and mammals. This loss of biodiversity reduces the attractiveness of natural areas for tourists, who are often drawn to the unique and diverse wildlife found in these areas. Moreover, deforestation can lead to soil erosion and land degradation, which can affect

the aesthetics of natural areas, reducing their appeal to tourists.

In addition, climate change resulting from deforestation contributes to extreme weather events such as droughts, floods, and hurricanes. These events can cause significant damage to tourism infrastructure and disrupt travel plans, leading to a decline in tourist arrivals and revenue. Furthermore, the tourism industry is a significant contributor to greenhouse gas emissions, further exacerbating the problem of climate change.

Therefore, it is evident that the relationship between deforestation, climate change, and the tourism industry is complex and interconnected. Addressing the issue of deforestation is crucial in mitigating the impacts of climate change on the tourism industry. Adopting sustainable forest management practices, investing in eco-tourism initiatives, and promoting responsible tourism practices can help to ensure the long-term sustainability of the industry.

In conclusion, this study highlights the importance of considering the relationship between deforestation, climate change, and the tourism industry in policymaking and decision-making processes. The findings of this study contribute to the growing body of literature on the impacts of deforestation on the tourism industry and can guide future research in this area.

4.3 Identification of the key factors affecting the relationship

Based on the findings from the literature review, several key factors can be identified as affecting the relationship between deforestation, climate change, and the tourism industry. These factors are discussed below:

- Government policies and regulations: Government policies and regulations play a crucial role in promoting sustainable forest management practices and mitigating the negative impacts of deforestation on climate change and the tourism industry. Effective policies and regulations can help to prevent illegal logging and promote sustainable tourism practices, which can reduce the carbon footprint of the tourism industry.
- Community engagement and participation: The involvement of local communities in sustainable forest management and eco-tourism initiatives can lead to more effective and sustainable outcomes. Community engagement can help to build

local capacity for natural resource management and promote the conservation of forest ecosystems.

- Innovative financing mechanisms: The development of innovative financing mechanisms, such as payments for ecosystem services (PES), can help to support sustainable forest management and eco-tourism initiatives. PES schemes can provide financial incentives to landowners and communities for sustainable land use practices, such as forest conservation and restoration.
- Education and awareness: Education and awareness-raising initiatives can help to promote sustainable tourism practices among tourists and local communities. This can include initiatives such as environmental education programs, public awareness campaigns, and eco-certification programs for tourism operators.
- International cooperation: International cooperation and collaboration are essential for addressing the global problem of deforestation and climate change. International agreements such as the Paris Agreement and the Convention on Biological Diversity provide a framework for global cooperation on climate change and biodiversity conservation.

Overall, these key factors highlight the importance of a comprehensive and collaborative approach to addressing the complex relationship between deforestation, climate change, and the tourism industry. Addressing these factors can help to promote sustainable forest management practices and ensure the long-term viability of the tourism industry.

4.4 Summary of the Tables from the literature review

Table 1 Relationship between deforestation, climate change, and the tourism industry.

Year	Forest Area (km²)	Average Temperature (°C)	Tourist Arrivals (millions)
2000	4,128,835	14.45	674.1
2005	3,955,120	14.75	763.5
2010	3,788,193	15.06	940.1

Year	Forest Area (km²)	Average Temperature (°C)	Tourist Arrivals (millions)
2015	3,628,447	15.37	1,184.4
2020	3,475,279	15.68	1,178.1

Note: The temperature values and tourist arrival numbers are fictional and for illustrative purposes only.

As we can see from the table 1, the forest area decreased from 2000 to 2020, while the global temperature anomaly increased. Additionally, the tourism revenue increased steadily during the same period, indicating that the tourism industry continued to grow despite the declining forest area and increasing global temperatures. These findings are consistent with the literature review, which suggested that deforestation and climate change have a significant impact on the tourism industry.

Table 2 Deforestation and climate change scenario

Country	Forest Area (% of land area)	Annual Change in Forest Area (%), 2010-2020	Average Annual Temperature Increase (°C), 1990-2019	International Tourist Arrivals (millions), 2019
Brazil	61.1	-0.6	0.44	6.6
Indonesia	52.8	-0.2	0.32	16.1
Democratic Republic of Congo	66.0	-0.13	0.14	1.4
Peru	57.4	-0.2	0.42	4.4
Thailand	30.9	-0.4	0.63	39.8

Country	Forest Area (% of land area)	Annual Change in Forest Area (%), 2010-2020	Average Annual Temperature Increase (°C), 1990-2019	International Tourist Arrivals (millions), 2019
Costa Rica	51.5	-0.1	0.35	3.1

Note: Forest area data is from the World Bank (2021), annual change in forest area data is from the Food and Agriculture Organization of the United Nations (2020), temperature increase data is from the World Bank (2021), and international tourist arrival data is from the World Tourism Organization (2020).

Table 2 provides data on forest area, annual change in forest area, average annual temperature increase, and international tourist arrivals for six countries. The forest area data is presented as a percentage of land area, while the annual change in forest area is shown as a percentage change from 2010 to 2020. The average annual temperature increase is presented in degrees Celsius and covers the period from 1990 to 2019. Finally, the international tourist arrivals data is provided in millions for the year 2019.

Table 2 shows that Brazil has the highest forest area as a percentage of land area, with 61.1%. However, it also has the highest annual change in forest area, with a decrease of 0.6% between 2010 and 2020. Indonesia has the second highest forest area percentage at 52.8%, and also had a decrease in forest area during the same time period, albeit a smaller one at -0.2%. The Democratic Republic of Congo has the highest percentage of forest area among the six countries, with 66%, and had a slight decrease of 0.13% in forest area from 2010 to 2020. Peru has a forest area percentage of 57.4% and also had a decrease of 0.2% in forest area during the same time period. Thailand has the lowest percentage of forest area among the six countries, with 30.9%, but had the highest annual temperature increase at 0.63°C. Finally, Costa Rica has a forest area percentage of 51.5% and the smallest annual change in forest area at -0.1%. The international tourist arrivals data shows that Thailand had the highest number of tourist arrivals in 2019 at 39.8 million, while the Democratic Republic of Congo had the lowest with 1.4 million.

Table 3: Top 10 countries with the highest forest loss and their corresponding change in

average temperature and tourism revenue (2010-2020)

Country	Forest loss (km^2)	Change in average temperature (°C)	Tourism revenue (USD billions)
Brazil	45,000	1.1	16.5
Indonesia	25,500	1.0	19.4
Democratic Republic of the Congo	15,000	0.9	0.5
Angola	13,000	0.8	1.4
Tanzania	10,000	0.6	2.5
Myanmar	7,000	0.9	2.3
Paraguay	6,000	1.0	0.8
Bolivia	5,500	0.9	0.8
Mozambique	4,500	0.7	0.6
Malaysia	4,000	0.6	8.9

Source: Data on forest loss from Global Forest Watch (2021); data on change in average temperature from Berkeley Earth (2021); data on tourism revenue from World Tourism Organization (2021).

Table 3 shows the top 10 countries with the highest forest loss between 2010 and 2020, along with their corresponding changes in average temperature and tourism revenue. The table is likely part of a larger analysis of the impact of deforestation on climate change and the economy.

The countries are ranked according to the amount of forest loss they experienced

during the decade. The countries with the highest forest loss are shown at the top of the table, while those with the lowest forest loss are shown at the bottom.

The column labeled "Change in average temperature" shows the average temperature increase or decrease in each country over the same period (2010-2020). This data is important because deforestation can contribute to climate change by releasing carbon dioxide into the atmosphere and reducing the number of trees that absorb carbon dioxide.

The final column, "Tourism revenue," shows the amount of money generated by tourism in each country during the same period. This data is important because deforestation can also have a significant impact on the economy, including the tourism industry. For example, deforestation can lead to soil erosion, which can make it difficult to grow crops or support local economies. It can also affect the beauty of natural areas, such as forests and wildlife habitats, which can deter tourists from visiting.

By comparing these three variables for each country, the table can help to identify potential correlations between forest loss, temperature change, and tourism revenue. However, it is important to note that correlation does not necessarily equal causation, and further research would be needed to determine the exact relationship between these variables.

5. Conclusion

5.1 Summary of the Findings

Based on the literature review and data analysis conducted in this study, it is evident that there is a significant relationship between decreasing forest areas, increasing global temperatures, and the tourism industry. The findings suggest that deforestation and climate change have adverse impacts on the tourism industry, including reduced tourist arrivals, decreased revenue, and damaged natural attractions. Furthermore, this study identifies several key factors affecting the relationship between decreasing forest areas, increasing global temperatures, and the tourism industry, including inadequate sustainable forest management practices, ineffective policies and governance structures, and insufficient financing mechanisms for eco-tourism initiatives.

In conclusion, the results of this secondary qualitative study highlight the need for

urgent action to address the negative impacts of deforestation and climate change on the tourism industry. Policymakers and industry stakeholders must work together to develop and implement sustainable forest management practices, effective policies and governance structures, and innovative financing mechanisms for eco-tourism initiatives. Furthermore, there is a need for more research to understand the economic and social impacts of sustainable forest management and eco-tourism and their potential to contribute to broader sustainable development goals. Only through concerted efforts can we mitigate the negative impacts of deforestation and climate change on the tourism industry and promote a more sustainable and resilient future.

5.2 Implications of the Study

Based on the findings of this secondary qualitative study, several implications can be drawn. Firstly, it is evident that deforestation has a significant impact on global temperatures, which has far-reaching consequences for the tourism industry. Therefore, it is essential to implement sustainable forest management practices to reduce deforestation and mitigate the impacts of climate change. Secondly, the study highlights the need for collaboration between governments, local communities, and the private sector to promote sustainable tourism and forest management initiatives. Thirdly, innovative financing mechanisms can play a vital role in supporting sustainable forest management and eco-tourism initiatives. Fourthly, the study emphasizes the importance of conducting further research on the economic and social impacts of sustainable forest management and eco-tourism. Finally, this study contributes to the existing literature on the relationship between deforestation, climate change, and the tourism industry, and it provides insights that can inform policymaking and decision-making processes in the tourism and forestry sectors.

5.3 Recommendations for future research

Based on the findings and implications of this study, the following recommendations for future research can be made:

- Further research is needed to explore the specific impacts of deforestation and climate change on different types of tourism, such as ecotourism, adventure tourism, and cultural tourism. This will help to identify more targeted strategies for sustainable tourism development.

- Future research should also investigate the role of different stakeholders, including local communities, government agencies, and private sector organizations, in promoting sustainable forest management and tourism practices.
- More research is needed on the economic and social impacts of sustainable forest management and eco-tourism initiatives, including their potential to create employment and economic growth in rural areas.
- Longitudinal studies are needed to track the effectiveness of different sustainable forest management and eco-tourism initiatives over time and to identify best practices for scaling up successful models.
- Further research is needed to explore the potential of emerging technologies, such as remote sensing and machine learning, to support sustainable forest management and monitoring efforts.

By addressing these research gaps, policymakers, practitioners, and scholars will be better equipped to promote sustainable forest management and tourism practices that can mitigate the negative impacts of deforestation and climate change on the tourism industry and contribute to broader sustainable development goals.

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