

Towards Sustainability of Eco-tourism through Ecopreneurship, a Case Study of Camp Ndunda Falls in Embu County, Kenya

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Abstract

Ecotourism presents an ecopreneurship opportunity in promoting global sustainability and environmental conservation within the tourism industry by emphasizing environmental conservation, community development, and the preservation of local cultures through responsible travel practices. It is a tool for promoting sustainable development, protecting sensitive ecosystems, and preserving cultural heritage. However, information on sustainability initiatives is limited and needs a study. This case examines Camp Ndunda Falls' sustainability practices by looking into environmental variables, societal issues, and existing government policy frameworks, as well as their impact on the site's long-term viability as an ecotourism destination. The authors established the need for preserving the natural environment and providing sustainable tourism opportunities by employing a descriptive case study design that included an in-depth study of global, regional, and local ecotourism sites and a comparative review of their practices with Camp Ndunda Falls' approaches to sustainability. The site's long-term viability and visitor appeal were jeopardized since deforestation and plastic garbage were deemed a big issue. The presence of experienced staff, the promotion of local culture through language and cuisine, and the creation of job opportunities for locals were deemed critical to the site's survival, while government laws were deemed instrumental in protecting the natural environment and shaping the activities carried out at Camp Ndunda Falls. The symbiotic relationship between the Kenya Forest Service, Kenya Wildlife Service, and ecotourism enterprise provides an opportunity for the community to benefit from sustainable practices with economic value.

Keywords: Ecotourism, Ecopreneurship, Sustainability, Environment, Social, Government

Introduction

Background of the Study

Eco-tourism is a merger of tourism and environmental conservation that aims to reduce negative impacts on natural ecosystems while increasing benefits for local populations. It has grown as an important sector within the global tourist business, emphasizing the importance of environmental conservation and community development, a phenomenon that began with industrialization and the growth of ecopreneurs. Ecopreneurs can recognize environmental concerns and offer environmental products and/or services that will help solve both business and environmental challenges by giving a long-term solution, with ecotourism as an example.

Ecotourism has lately emerged as an important strategy of promoting global sustainability and environmental conservation in tourism. It stresses environmental conservation, community development, and cultural preservation, as well as responsible travel behaviours. It is a crucial tool for promoting sustainable development, protecting sensitive ecosystems, and preserving cultural heritage. Its locations play a vital part in attaining these objectives by providing tourists with immersive experiences in natural and cultural settings while also providing economic benefits to host communities (Fenell, 2020). Community engagement, protected area management, sustainable infrastructure, education, and research are all themes that have been integrated into worldwide ecotourism initiatives.

Ecotourism has its own niche markets around the world, but its environmental impact is increasingly being perceived adversely as a result of tourism's globalization and rising per capita income (Li & Sofield, 2006). It is considered the fastest-growing tourism sector (Tang et al., 2015), with some projections expecting a 20% annual growth rate over the next decade (Su et al., 2014; Wang et al., 2017). As a result, ecotourism practitioners must better understand why some areas are better served than others when it comes to tourist resource availability. As eco-tourism continues to gain popularity worldwide, it becomes crucial to examine the sustainability practices implemented by different destinations with a view of informing interventions.

It is with this backdrop that the research sought to use Camp Ndunda Falls as an ecotourism venture to demonstrate how social, environmental and regulatory frameworks could help promote sustainability of these ecopreneurs. It is hoped that through this analysis in-depth knowledge of this alongside other ecotourism initiatives could provide insights on how to further enhance sustainability.

a. Analysis of Ecotourism Sites and Sustainability Initiatives

Recreation facilities, such as Camp Ndunda, set in natural surroundings, provide an unprecedented chance for adventurers, nature lovers, and leisure seekers to connect with the environment and community in meaningful ways. This study focuses on seven distinct destinations, each of which provides a broad range of ecotourism activities to suit a variety of interests and preferences. By investigating the recreational facilities and their activities, the study hopes to highlight the variety of experiences available at these sites, as well as their significance in encouraging environmental appreciation and conservation. It also studies the sustainable methods used in each place and assesses their positive and negative environmental implications. An examination of the case reveals shared sustainability measures with the Camp Ndunda Falls ecotourism location and assesses their success in fostering environmental conservation, cultural preservation, and socioeconomic benefits.

The Monte-Verde Cloud Forest Reserve in Costa Rica is a successful ecotourism project. The reserve collaborates closely with local communities, providing conservation incentives

and promoting community-based initiatives. Visitors learn about the endangered cloud forest habitat, and sustainable infrastructure ensures that the ecology is not affected. This strategy not only helps to maintain biodiverse environments, but it also empowers local communities by involving them in decision-making and sharing the economic benefits of ecotourism (Montero & Caoelli, 2019).

The research findings demonstrate Monteverde Cloud Forest Reserve's dedication to developing sustainable forestry techniques. The reserve uses selective logging techniques, which ensures that only old trees are removed while younger trees are left alone to promote natural regeneration. Furthermore, reforestation works are underway to repair degraded portions of the reserve, producing critical habitats for a wide diversity of plant and animal species. These approaches attempt to protect the forest ecosystem and biodiversity hotspots (Morse et al., 2018). The same studies highlight the reserve's initiatives to encourage prudent water and energy use. The reserve has implemented energy-efficient infrastructure, such as solar panels to power visitor centers and low-flow water fixtures in lodging and services. These efforts not only lessen the reserve's environmental impact, but also function as instructional aids for visitors, demonstrating real alternatives to sustainable living. Educational activities are also in place to create awareness among visitors and local communities about the need of conservation and responsible resource management. Visitors can learn about the delicate balance of ecosystems and the environmental consequences of their actions through guided tours and interactive exhibits (Honey, 2008). These initiatives demonstrate the Monteverde Cloud Forest Reserve's commitment to environmental stewardship and sustainability, assuring the preservation of natural resources for future generations to enjoy and appreciate.

The *Great Barrier Reef Marine Park* in Australia is yet another example of sustainable ecotourism that stands out. It is a World Heritage Site and exemplifies a strong commitment to biodiversity protection and responsible tourism. To safeguard delicate coral reefs and marine life, strict rules and zoning plans have been put in place. Eco-certified tour operators follow strict requirements to guarantee that tourists have the least possible impact on the reef while also giving opportunity for immersive and educational experiences. The park administration constantly modifies its tactics to meet environmental threats and difficulties through ongoing study and monitoring, assuring the reef's long-term survival as a top ecotourism destination (Murdoch, 1996).

The *Galapagos Islands* in Ecuador, is yet another renowned eco-tourism destination has strict regulations and visitor quotas to minimize disturbance to endemic species. The islands are noted for their great biodiversity and are home to several species that are found nowhere else on the planet. Visitors' numbers and activities are strictly regulated, protecting the vulnerable ecosystems from over tourism. Local communities actively participate in conservation efforts, allowing them to profit from tourism advantages through sustainable companies and community projects. Educational initiatives on the islands emphasize the need of maintaining the unique animals and habitats, encouraging tourists to be responsibly. As a result, the Galápagos Islands have retained their pristine natural beauty and continue to be a model of sustainable ecotourism in the region (Zebich-Knos, 2008). The ecotourism site has implemented strict regulations and visitor quotas to minimize disturbance to endemic species. These measures include visitor limits, designated trails, and supervised wildlife viewing to reduce the ecological impact of tourism on fragile ecosystems (Loope & Muller-Dumbois, 1989). Equally, Invasive species eradication programs and habitat restoration initiatives have been put in place. These invasive species eradication programs and habitat

restoration initiatives have been successful in restoring native ecosystems and protecting endemic species in the Galapagos Islands. These efforts involve the removal of invasive species, such as rats and goats, and the restoration of habitat through revegetation and reforestation projects (Walsh et al., 2010). The *Uluru-Kata Tjuta National Park* in Australia has implemented a respectful interpretation of Indigenous cultural heritage through guided tours and storytelling. These cultural experiences provide visitors with insights into the spiritual significance of the land to the Anangu people, the traditional custodians of the area (Connell & Rugendyke, 2014). There is also collaboration with indigenous communities to develop sustainable tourism practices. The park works closely with indigenous communities to develop sustainable tourism practices that value traditional knowledge and values. This collaboration involves the active participation of Anangu elders in decision-making processes and the integration of indigenous perspectives into tourism management plans (Buultjens et al., 2009).

The *Namib Rand Nature Reserve* is a regional home of diversity. It is a shining example of African sustainable ecotourism. This vast reserve is committed to preserving the desert's distinctive terrain and fauna. Community involvement is one of the primary aspects impacting its sustainability, since the reserve actively engages and empowers local communities through numerous conservation and tourism-related possibilities. The reserve's eco-lodges are powered by renewable energy sources, demonstrating a dedication to sustainable infrastructure. The success of Namib Rand is due to its holistic strategy, which balances conservation efforts with the economic and social well-being of local populations (Keja-Kaereho & Tjizu, 2019)

The *Grootbos Private Nature Reserve* is an equally exceptional ecotourism venue in South Africa. The reserve, which is located in the Western Cape, is dedicated to the preservation of the fynbos biome, a unique floral kingdom with extraordinary biodiversity. The Reserve actively engages surrounding communities through education and sustainable enterprise development and instilling a sense of ownership and pride in their natural heritage. Its magnificent eco-lodges are constructed with minimal environmental impact and serve as a platform for ecotourism activities, allowing tourists to enjoy the pristine landscapes while also contributing to conservation efforts. Grootbos Private Nature Reserve exemplifies how sustainable ecotourism can boost conservation efforts and benefit South African communities (Parker & Khare, 2005)

The *Maasai Mara National Reserve* in Kenya exhibits a commitment to ecotourism methods. It is known for its yearly wildebeest migration as well as its rich species, its conservation is a priority, and the reserve works closely with the Maasai population through including them in decision-making and benefit-sharing activities. Eco-friendly resorts and safari operators follow appropriate methods to reduce their environmental impact. Visitors are encouraged to support sustainable practices through educational tours that provide insights into Maasai culture and conservation activities. The reserve serves as an exemplary ecotourism model that integrates animal conservation, community involvement, and responsible tourism to maintain the region's long-term viability 2020. The successful integration of Maasai communities into tourism operations within the Maasai Mara National Reserve was done through cultural experiences, such as traditional dance performances and visits to Maasai villages. Tourists have the opportunity to engage with local communities and learn about their customs and way of life (Brockington & Homewood, 2001). There are also revenue-sharing schemes that ensure equitable distribution of tourism benefits which have been implemented to ensure that tourism benefits are distributed equitably among

communities within the reserve. These schemes often involve the allocation of a percentage of tourism revenue to community development projects, such as education, healthcare, and infrastructure development (Honey, 2008)

Therefore, from a Kenyan perspective, sustainability in ecotourism is critical because it connects environmental conservation with the economic interests of the proprietors as well as the well-being of local populations. Many communities see ecotourism as a way to maintain their natural assets, cultural traditions, and assure a long-term source of income. Community-based eco-lodges and guided tours conducted by local guides enable communities to actively participate in conservation initiatives while also showcasing their rich cultural history to guests. To reduce the environmental imprint of tourism operations, sustainability efforts also include responsible waste management, water conservation, and the use of renewable energy (Parker & Khare, 2005).

The case studies presented in this literature illustrate the diverse approaches to sustainability adopted by regional and international eco-tourism sites. While each destination faces unique challenges, there is a common commitment to balancing environmental conservation with socio-economic development. By sharing best practices and lessons learned, these sites can continue to evolve as models of sustainable tourism, demonstrating the potential for tourism to be a force for positive change in both natural and cultural landscapes.

b. Challenges and Opportunities in Managing these Ecotourism Sites

Despite the progress made in implementing sustainable practices, regional and international eco-tourism sites face several challenges, including balancing conservation objectives with economic development needs; managing visitor pressure and maintaining carrying capacity; and addressing socio-economic inequalities within local communities. However, these challenges also present opportunities for innovation and collaboration such as strengthening partnerships between governments, NGOs, and local stakeholders to co-create sustainable tourism strategies; investing in education and capacity-building programs to empower local communities and foster a sense of ownership over tourism initiatives; community Development; and stimulating economic growth, supporting small businesses, and investing in infrastructure projects.

c. Camp Ndunda Falls as an Ecopreneurship venture

Camp Ndunda Falls is an outdoor adventure site located in the Njukiri Forest in Embu County with the coordinates -0.48778, 37.42885. It is located on the banks of Rupingazi River at the foothills of Mount Kenya 8kms from Embu town off Kibugu road. See Figure 1. They offer a wide range of adventurous activities such as zip lining, wild swing, rock-climbing, archery, canopy walk, mud fun as well as great team building packages and accommodation. It is a well-known ecotourism destination set within a natural reserve known for its incredible biodiversity and intriguing vistas. It was established in 2015 after Kenya Forest Service leased the ecosite as an eco-lodge centre to Camp Ndunda Company Limited. In the lease arrangement, the Kenya Forest Service would assume the oversight of responsible use of the site while Camp Ndunda Falls Company Limited would ensure sustainable business practices with social and environmental considerations.

The aerial map of Camp Ndunda Falls depicts an area with thick vegetation and significant road infrastructure and settlement patterns. See Figure 2. The objectives of its establishment were to engage with the surrounding community in environmental

sustainability; to bring about economic development within the area and community; to provide an easily accessible tourist attraction site; and to create an education site for environmental research and development.

There is significant interest in the eco-tourism site with local and foreign tourists flocking in on weekly basis to enjoy the nature friendly site. Data on the business volumes is scanty but there is observable evidence of a sprouting venture that could soon boom if not yet. Coupled with the ever expanding global demand for sustainable tourism experiences and practices, there is now an increasing need to assess the sustainability and feasibility of this ecotourism sites and therein lies concern for sustainability practices to safeguard business, government and community interests.

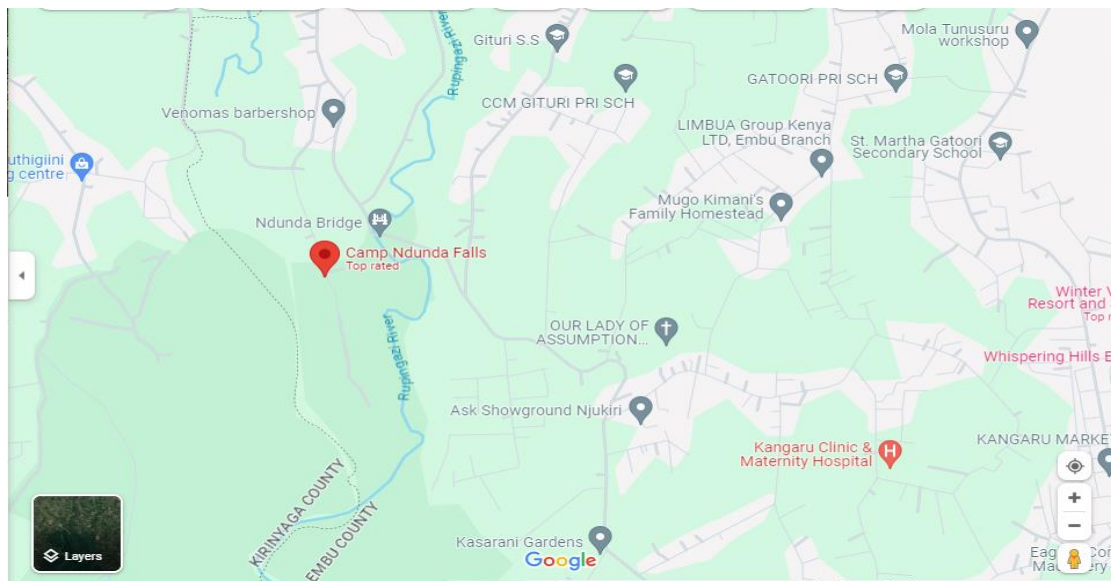


Figure 1: Location of Camp Ndunda Falls

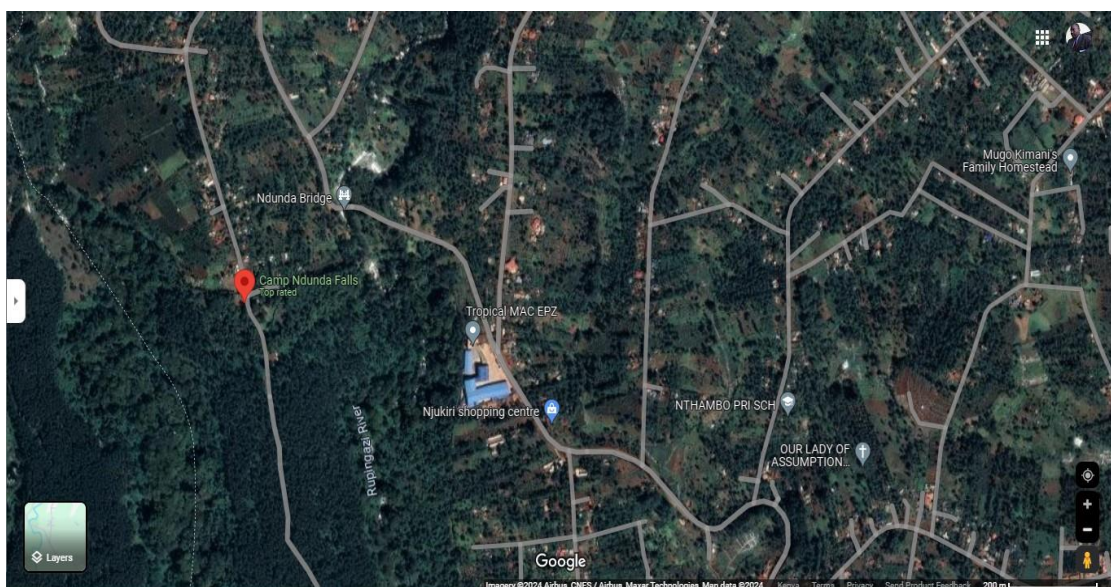


Figure 2: Aerial map of the location of Camp Ndunda Falls.

d. Aim of the Study

The purpose of this research is to delve into the practices and effects of the ecosite so as to assess its sustainability as an ecotourism site and ensure its long-term survival as an ecopreneurship. This study is critical for project's own operations and future development alongside other similar ventures based on the recommendations from this case. Through understanding and analysing such a project's sustainability policies allows for the analysis of its environmental impact, identification of areas for improvement, and ensuring the long-term maintenance of the natural environment on its premises Okech (2009) Furthermore, the study allows for an assessment of Camp Ndunda Falls's social impact and interaction with the local community, and such an ecosite can better understand its role in developing strong connections, preserving local customs, and instilling a sense of community ownership by investigating its interactions, community involvement, and cultural preservation programs while pursuing its economic benefits as a business (Okech, 2009).

Further still, the examination of Camp Ndunda Falls's economic sustainability provides for an assessment of its viability and economic benefits. More can be learned about its economic contribution to the region by evaluating revenue generating, job creation, and local economic development. Such measures would then enable Camp Ndunda Falls to create measures to improve its economic sustainability, assist local businesses, and optimize the positive economic consequences for both the camp and the surrounding community. An assessment of the factors influencing the medium and long-term sustainability of Camp Ndunda Falls as an ecosite is critical in establishing the success of the camp's conservation techniques, such as habitat protection, afforestation, and human activities, in limiting habitat disturbance and sustaining biodiversity even as it provides ecotourism services in the region.

However, this knowledge is not fully established and therefore the study's goal is to find areas where Camp Ndunda Falls's environmental practices might be improved and its environmental footprint reduced. In addition, budgetary restrictions make it difficult to execute critical sustainability measures. According to data, the conservation and sustainable development efforts of the project through Kenya Forest Service, the leaser are now allotted only 10% of the entire budget, restricting the scope and size of vital projects. A larger financial commitment is necessary to make Camp Ndunda Falls a fully sustainable ecotourism site. This is being done through experimenting with new finance models, obtaining additional money from public and private partnerships whereby currently KFS has leased out to an ecopreneur, and hence leveraging eco-tourism earnings to directly support conservation activities.

Data on environmental deterioration, community engagement levels, and financial deficits show the challenges that the Camp Ndunda Falls as a Project has faced in attaining sustainable ecotourism over the years. Other challenges experienced include minimal local participation; poor understanding of the concept of sustainability by community and other stakeholders; poor road infrastructure; lack of enough support from the local government; and fluctuating local economic conditions.

Therefore, addressing these challenges requires a multifaceted approach that includes effective environmental conservation techniques, community empowerment, and enough financial resources. By confronting these issues, Camp Ndunda Falls could emerge as a sustainable ecotourism site in the Embu region, preserving its natural wonders for future generations while benefiting local communities and improving the overall visitor experience (McCool & Moisey, 2009)

And by highlighting this ecotourism through this study, provides an opportunity for scholars, the government and local community an understanding of the dynamic relationship

between the venture, the local community, the government and the nature enthusiasts who flock to the site as tourists with the backdrop of challenges faced while making recommendations.

e. Objectives of the Study

The general objective of the study was to evaluate the determinants influencing the sustainability of Camp Ndunda Falls as an ecotourism site.

1. Specific Objectives of the Case Study

- (a) Environmental determinants and their effect on the sustainability of Camp Ndunda Falls as an ecotourism site.
- (b) Societal factors and their effect on the sustainability of Camp Ndunda Falls as an ecotourism site.
- (c) Existing government policy frameworks and their effect on the sustainability of Camp Ndunda Falls as an ecotourism site.
- (d)

2. Case Study Questions

- 1. What is the effect of environmental determinants on the sustainability of Camp Ndunda Falls as an ecotourism site?
- 2. What is the effect of social factors on the sustainability of Camp Ndunda Falls as an ecotourism site?
- 3. How do existing government policy frameworks affect the sustainability of Camp Ndunda Falls as an ecotourism site?

f. Justification of the Study

The report on Camp Ndunda Falls's viability and existence as an ecotourism location provides considerable reason for the Kenyan government. Kenya is well-known for its various habitats and abundant wildlife, making it an ideal ecotourism destination. The government can obtain significant insights on the practices and impacts of Camp Ndunda Falls, one of the country's most notable ecotourism facilities, by completing this study. Understanding the long-term viability of such locations corresponds with the government's commitment to long-term tourism growth, environmental conservation, and community empowerment.

The study on Camp Ndunda Falls's sustainability and existence as an ecotourism location in Embu County provides considerable reason for the local government and stakeholders. Embu County is well-known for its scenic beauty, rich cultural diversity, and tourism development potential. The local administration of County Government of Embu can obtain significant insights into the sustainability practices and implications of Camp Ndunda Falls, by applying recommendations of this study.

For the stakeholders of the camp such as the residents and employees of Camp Ndunda Falls, they constitute critical stakeholders in understanding and enhancing its sustainability practices. Equally, the ecotourism site holds significant justification for scholars and researchers in the field of sustainable tourism and environmental studies. It presents a valuable case study for scholars to examine and analyse the implementation of sustainable practices in an ecotourism setting (Camp Ndunda Falls: Camping sites in Embu County Kenya., n.d.).

I. Theoretical Underpinnings of The Study

a. Community-Based Tourism (CBT) Theory

The theory emerged in the late 1980s and was developed by Richard W. Butler and David A. Fennell in the year 1980. CBT advocates for a more inclusive and participatory approach to tourism, where local communities are actively engaged in decision-making and benefit-sharing processes (Butler & Fennell, 2018). This theory recognizes the significance of community involvement in sustainable tourism development and highlights the potential positive impacts on the environment and socio-cultural aspects of a destination. The theory implies that involving local communities in decision-making processes and empowering them to actively participate in ecotourism initiatives can significantly influence the site's sustainability. By integrating the perspectives, knowledge, and preferences of the local communities, the tourism operations can be better aligned with the needs and aspirations of the people who reside in the area (Butler & Fennell, 2018)

Moreover, CBT theory emphasizes the importance of building a strong sense of ownership and pride among local communities regarding their natural and cultural heritage. By fostering community-led ecotourism projects and revenue-sharing mechanisms, the theory suggests that the sustainability of Camp Ndunda can be enhanced. Local residents become stakeholders in the conservation efforts and have a vested interest in preserving the environmental and cultural assets of the site for future generations (Lemelin et al., 2020)

To better understand the applicability of CBT theory in the case of Camp Ndunda Falls, recent studies have explored the impacts of community involvement in ecotourism projects and the role of social factors in ensuring sustainability (Gavin & McCool, 2021). Research conducted in various ecotourism sites has demonstrated that community-based approaches can lead to better conservation outcomes, increased environmental awareness, and improved overall well-being of the local residents (Lemelin et al., 2020). By drawing on the principles of CBT theory, this study aims to determine how social factors, such as community engagement, cultural exchange initiatives, and revenue-sharing programs influence the sustainability of Camp Ndunda as an ecotourism site. The theory therefore provides a comprehensive framework to examine the interactions between local communities, tourists, and ecotourism operators and how these relationships impact the environmental and socio-cultural dimensions of the site.

b. Resource-based theory (RBT)

The RBT is an organizational strategy model that focuses on internal resources as a means of creating competitive advantage which is key in organizational performance. It is based on the principles that organizations are resource constrained and decisions must be made with reference to limited resource (Barney et al., 2011; Olalla, 1999). Using RBT for analyses of ecotourism explains some of the challenges faced. It helps us understand the limitations of existing ecotourism development models as well as some of the alternatives that are available. Resource-based theory is an important conceptual framework for addressing problems in development. In ecotourism, it is also an important framework for understanding why certain tourist destinations are better served than others in terms of the resources available to tourists (Li & Sofield, 2006)

From an RBT perspective, the first steps in sustainable development should include determining what activities people need or want, and then looking at how they achieve these activities. Sustainable development supports policies that are aimed at satisfying basic needs while allowing for future generations to satisfy their own needs (Agrawal & Rahman, 2015).

These policies are based on the belief that people have been resource constrained. Resource-based theory posits that resource constraints are pervasive and there are strategies people employ to satisfy their needs.

The second principle, which is often regarded as the essence of RBT, describes how unlimited actions are likely to be bad for development. It means that when people pursue unlimited ends, they will act in anti-sustainable ways. Environmental sustainability, based on the principles of RBT, posits that development should be aimed at satisfying basic needs, and in the long run, it should permit overall well-being to increase. However, sustainable development requires consideration of the legal and cultural contexts within which people act (Agrawal & Rahman, 2015). According to RBT, when people pursue unlimited ends, they are likely to act in anti-sustainable ways. This implies that we can identify the different forms of sustainable development as those that satisfy basic needs and maximize long-term well-being.

The third principle is that unintended negative consequences are likely when people pursue unlimited ends. Since people face resource constraints in decision-making, RBT suggests that sustainable development is possible by satisfying basic needs and maximizing long-term well-being through maximizing utility while minimizing costs (Costanza, et al., 2014). Due to economic pursuit, Camp Ndunda Falls ecosite must develop a balance between sustainability practices through community engagement.

Research by Rhama & Kusumasari (2022) examined the Resource Based Theory (RBT) in national park development of Indonesia and how it would be used to develop strategies and increase competitive advantage. Through an assessment and using RBT, the study identified and evaluated the management of Sebangau National Park (SNP) which had been known as one of the best national parks in the world and which had been managed with the concept of ecotourism. The findings of the study showed that SNP faced weak communication and synergy among stakeholders as well as the social exchanges between tourists and local residents which had failed to be implemented. Therefore, the goal of ecotourism to help increase the sustainable socio-economic well-being of local people to reduce poverty was difficult to achieve.

The Resource Based Theory therefore provides a useful framework for developing tourism products in regard to sustainable development such as Camp Ndunda Falls and it is felt important for ecotourism practitioners to develop products that are less environmentally damaging than alternative tourism products. It also meant that such sites work on improving socio-economic conditions of communities where tourist experiences can take place and not only develop ecotourist destinations but also policies and institutions that are responsive to local cultures.

II. Approach

The research utilized a case study design which encompassed an in-depth study of Camp Ndunda and its sustainability status. This approach is used to narrow down a broad field of research such as in this case sustainability of ecotourism sites to this particular case (Creswell, 2014). This is done after a comparative analysis of similar cases through relevant literature. Qualitative and quantitative research methodologies were also used to get feedback and draw scientific conclusions. A quantitative survey would then allow for the systematic collection of responses to form numerical data hence providing an efficient means to obtain a comprehensive understanding of various factors affecting the sustainability of Camp Ndunda Falls as an ecotourism site. By these approaches the researchers were able assess

perceptions, opinions, and experiences of employees at the camp, providing valuable insights for the investigation. The open ended responses were analysed qualitatively to provide generalizations that provide insights into the study questions.

The target population was drawn from the employees working at Camp Ndunda Falls Falls in Embu, comprising 26 individuals in total including the proprietor who served as a key respondent. These employees belonged to different departments, each playing a crucial role in the functioning and maintenance of the ecotourism site. The departments at Camp Ndunda Falls Falls Embu are listed in Table 1 below:

Table 1

Distribution of Employees in Different Departments at Camp Ndunda Falls Falls

Department	Number of Employees
Proprietor	1
Tour Guides	3
Hospitality Staff	8
Maintenance Team	3
Environmental Experts	2
Administrative Staff	4
Other Support Staff	5
Total	26

Source: Camp Ndunda Falls Falls, Embu Records (2023)

A. Sample Frame, Size and Sampling Technique

In the study, the sample frame consisted of the list of all 25 employees and the proprietor at Camp Ndunda Falls Falls. Therefore a census ensured that all individuals in the target population had an equal chance of being included in the study, allowing for a comprehensive understanding of the key issues under investigation. This is also because of the manageable population that stood to represent the interests of Camp Ndunda Falls, which the census provided. Coy (2019); Leedy & Ormrod (1980), say that a census approach is appropriate when all individuals in the target population are included in the study because of their representation and manageability.

Conducting a census allowed for comprehensive data collection and a holistic understanding of the factors influencing the sustainability of Camp Ndunda Falls as an ecotourism site. This approach also ensured that no employee was left out, and the findings could be generalized to the entire population of employees at the camp. A Kenya Forest service officer also provided additional information in this study as a key resource respondent.

B. Data Collection, Processing, Analysis and Presentation

To gather data from the employees, the study employed open-ended and closed-ended questionnaires. Closed-ended questionnaires provided a structured approach for collecting data, enabling respondents to select from predetermined response options. This method facilitated ease of data collection and analysis while allowing for the comparison of responses across different variables. The open-ended questions allowed respondents to share their views based on their perspectives and provided an opportunity for further insights over the issue.

The data collected from the questionnaires was processed and analysed using descriptive statistics, such as frequency and percentages, utilizing the Statistical Package for the Social Sciences (SPSS). Descriptive statistics provided a clear overview of the responses, allowing for the identification of trends and patterns related to the factors influencing the sustainability of Camp Ndunda Falls as an ecotourism site. The use of SPSS facilitated efficient data analysis, enabling the researchers to summarize and present the findings in a concise manner.

Data processing and analysis, as explained by Bryman (2016) involves organizing and interpreting the collected data. Therefore, the presentation of data involved the use of tables to display the results. This is because tables offer a clear and organized format to present numerical data, making it easier for readers to comprehend the research findings. The use of graphical representations, such as bar charts and pie charts, was meant to enhance the visual appeal and understanding of the results (Bryman, 2016).

Findings, Discussion and Analysis

Response Rate

23 of the 26 questionnaires administered were received as shown in Table 2. The expected number of responses was 26 (100%), but only 23 respondents (88%) participated, resulting in a high response rate. The 88% response rate indicates a relatively strong engagement from the targeted participants, ensuring the data's credibility and reliability for the analysis of factors influencing the sustainability of Camp Ndunda Falls as an ecotourism site.

Table 2

Response Rate

Response	Number of respondents	Percentages (%)
Expected Responses	26	100
Received Responses	23	88
Unresponsive	3	12

Source: Field Data, (2023)

A. Demographic Characteristics of Respondents

1. *Gender of respondents*

The researcher sought to find out the gender distribution of the respondents who participated in the study. The table below 3 shows the results.

Table 3

Gender of the Respondents

Sex	Frequency	Response Rate (%)
Male	16	69.5%
Female	7	30.5%
Total	23	100%

Source: Field Data, (2023)

Table 3 presents the gender distribution of the respondents who participated in the study. Out of the total 22 respondents, 16 were male, representing 69.5% of the participants, while 7 were female, representing 30.5% of the sample. The study had a higher

representation of male participants, suggesting a relatively greater involvement of males in the survey compared to females. Since most activities on the Camp were skewed towards masculinity it was understandable and they could provide first hand data without gender bias.

2. Age Group

In Table 4 the age distribution of the respondents who participated in the study is presented.

Table 4

Age Group

Age Group	Frequency	Response Rate (%)
Below 18 Years	0	0%
Between 18-35 years	22	95.6%
Above 35 years	1	4.4%
Total	23	100%

Source: Field Data, (2023)

Table 4 shows the age distribution of those who took part in the study. According to the findings, 22 respondents were between the ages of 18 and 35, accounting for 95.6% of the participants while the proprietor was the only one above 35. There were no respondents under the age of 18. The study predominantly included young adults implying that this age group was the primary focus of the research and were capable of providing experiential data on Camp Ndunda Falls.

3. Educational Qualifications

Table 5 presents the analysis of the highest education level attained by the respondents who participated in the survey.

Table 5

Educational Qualifications

Education Level	Frequency	Response Rate (%)
Primary	0	0%
Secondary	5	21.73%
College	10	43.47%
University	8	34.78%
Total	23	100%

Source: Field Data, (2023)

Table 5 summarizes the educational backgrounds of those who participated in the survey. The majority of respondents had finished postsecondary education, with 45.45% having completed college and 31.82% having acquired a university degree. A lesser percentage, 22.73%, had finished secondary school. None of the respondents had simply a high school diploma. According to the findings, a large proportion of the participants had higher levels of

education, with college and university degrees being more common among respondents which was appropriate for the use of the questionnaire and informed opinion.

B. Environmental Factors and Sustainability

1. Environmental Factors Impacting the Continuity of Camp Ndunda Falls as an Eco-Tourism Site

Table 6 illustrates the significance of many environmental conditions in the long-term viability of Camp Ndunda Falls as an eco-tourism destination. Participants were asked to rank each factor's importance in sustaining the site's biological balance and attracting tourists. The table gives useful information on the significant environmental factors that contribute to the site's status as an eco-tourism destination.

Table 6

Environmental Factors Impacting the Continuity of Camp Ndunda Falls

ITEM	Not Significant		Slightly Significant		Significant		Fairly Fairly Significant		Quite Significant		No opinion	
	F	%	F	%	F	%	F	%	F	%	F	%
Natural Forest	0	0	0	0	5	22.7	0	0	16	72.7	1	4.5
Exotic forest (planted)	0	0	3	13.6	4	18.2	1	4.5	12	54.5	2	9.1
Rivers & water fall	0	0	0	0	2	9.1	0	0	20	90.9	0	0
Traditional houses/camping	0	0	1	4.5	6	27.3	2	9.1	13	59.1	0	0
Nature trail	0	0	0	0	5	22.7	2	9.1	15	68.2	0	0
Soil type/cover	0	0	3	13.6	2	9.1	2	9.1	15	68.2	0	0
Wild life/birds	0	0	1	4.5	3	13.6	3	13.6	15	68.2	0	0
Clean/quality air	0	0	0	0	3	13.6	1	4.5	18	81.8	0	0
Weather patterns	1	4.5	1	4.5	4	18.2	2	9.1	12	54.5	2	9.1

Source: Field Data, (2023)

Table 6 presents the respondents' perceptions of the significance of various environmental factors to the continuity of Camp Ndunda Falls. The data reveals that natural forests were considered "Quite significant" by 72.7% of participants, highlighting their significance in ensuring the site's continuity. Similarly, 54.5% of respondents regarded exotic

forests (planted) as "Quite significant" factors for the site's continuity. Rivers and waterfalls were perceived as "very important" by 90.9% of participants, emphasizing their crucial role in maintaining the eco-tourism site.

Moreover, traditional houses/camping, nature trails, and soil type/cover were also deemed significant, with 59.1%, 68.2%, and 68.2% of participants considering them "Quite significant," respectively. Additionally, clean/quality air was perceived as "Quite Significant" by 81.8% of respondents, further emphasizing its role in sustaining the site. The results underscore the significance of various environmental factors in ensuring the continuity of Camp Ndunda Falls as an eco-tourism site and highlight the need for their preservation and protection.

The data shows that the respondents place high importance on natural elements like forests, waterfalls, and wildlife, as well as clean air, for the continuity of Camp Ndunda Falls as an eco-tourism site. These environmental factors are crucial for the site's sustainability and success in attracting tourists. The results also highlight the need for conservation efforts to protect these important features and ensure the long-term viability of the eco-tourism site.

On *environmental factors attracting tourists* to Camp Ndunda Falls, respondents mentioned wildlife diversity and biodiversity conservation as crucial factors attracting tourists. One respondent commented, *"The abundant wildlife and efforts to preserve biodiversity make Camp Ndunda Falls a unique and exciting destination for wildlife enthusiasts."* Additionally, the presence of well-maintained nature trails and sustainable soil management practices were cited as contributing to the site's appeal. One respondent expressed, *"The well-kept nature trails and environmentally friendly soil management practices demonstrate the commitment to conservation, making visitors feel they are supporting a responsible and sustainable eco-tourism site."*

The responses highlight the significance of wildlife diversity, biodiversity conservation, well-maintained nature trails, and sustainable soil management practices in attracting tourists to Camp Ndunda Falls. These environmental factors create a unique and appealing experience for visitors, showcasing the site's commitment to conservation and responsible eco-tourism. The emphasis on preserving the natural environment and offering sustainable tourism opportunities contributes to the site's long-term viability and attractiveness to tourists.

2. Concerns on Air Pollution at Camp Ndunda Falls

Table 7 presents the respondents' levels of concern about air pollution at Camp Ndunda Falls. The data reveals that a significant portion of participants expressed varying degrees of concern.

Table 7
Concerns about Air Pollution at Camp Ndunda Falls

Response	Frequency	Response Rate (%)
Very concerned	15	65.2%
Concerned	5	21.7%
Indifferent	3	13.0%
Not concerned	0	0%
Total	23	100%

Source: Field Data, (2023)

In Table 7, the respondents' level of concern about air pollution at Camp Ndunda Falls is presented. The data shows that 65.2% of the respondents expressed being very concerned about air pollution at the camp. Additionally, 21.7% of the respondents indicated that they were concerned, while 13% were indifferent on the matter. None of the participants expressed being not concerned. The findings highlight a high level of concern among the respondents regarding air pollution at Camp Ndunda Falls, with the majority expressing extreme concern.

Determinants of Environmental Pollution at Camp Ndunda Falls

Table 8 displays the responses and corresponding percentages of participants regarding the factors that have the greatest impact on environmental pollution at Camp Ndunda Falls.

Table 8

Determinants of Environmental Pollution at Camp Ndunda Falls

Response	Frequency	Response Rate (%)
Industrial activities	0	0%
Dumping solid wastes	0	0%
Plastic waste	6	26.1%
Rapid urbanization	0	0%
Deforestation	15	65.2%
Population growth	2	8.6%
Total	23	100%

Source: Field Data, (2023)

The study findings revealed that, 65.2% of the participants believe that deforestation has the greatest impact on environmental pollution at the camp. Additionally, 26.1% of the respondents identified plastic waste as a significant contributing factor. Meanwhile, 8.6% of the participants stated that population growth has an effect on pollution at the site. None of the respondents mentioned industrial activities, dumping solid wastes, or rapid urbanization as major factors. The findings highlight the perceived significance of deforestation and plastic waste as the main contributors to environmental pollution at Camp Ndunda Falls, according to the responses. The Management of Camp Ndunda Falls have however put in place environmental sustainability practices as shown in Figure 3.



Figure 3: Environmental sustainability practices

3. Concern for Conservation of the Environment

Table 9 presents the frequency and corresponding percentages of respondents' level of concern for the conservation of the environment.

Table 9

Concern for Conservation of the Environment

Response	Frequency	Response Rate (%)
Extremely concerned	17	73.9%
Concerned	6	26.1%
Neutral	0	0%
Unconcerned	0	0%
Extremely unconcerned	0	0%
Total	23	100%

Source: Field Data, (2023)

According to the study's findings, 26.1% of participants and 73.9% of respondents said they were worried about the site's environmental preservation. No respondents expressed neutrality, a lack of concern, or extreme a lack of concern. The results show that participants at Camp Ndunda Falls have a high level of concern for environmental preservation, with the majority indicating very high concern.

C. Social Determinants

1. Social Determinants' Effects to Camp Ndunda Falls as an Eco-Tourism Site

Table 10 presents the respondents' perceptions of how certain social factors contribute to the existence and activities of Camp Ndunda Falls as an eco-tourism site.

Table 10

Social Determinants' effects to Camp Ndunda Falls as an Eco-Tourism Site

Statements	Not Significant		Slightly Significant		Significant		Fairly Significant		Quite Significant		No opinion	
	F	%	F	%	F	%	F	%	F	%	F	%
Local language	4	18.2	3	13.6	5	22.7	4	18.2	6	27.3	0	0
Experienced staff	0	0	0	0	1	4.5	0	0	21	95.5	0	0
Local food/drinks	1	4.5	1	4.5	8	36.4	2	9.1	10	45.5	0	0
Employment to locals	0	0	2	9.1	3	13.6	4	18.2	13	59.1	0	0

Source: Field Data, (2023)

The study findings reveal that, experienced staff play a crucial role, with 95.5% of participants considering them "Quite significant." Local language is also valued, with 27.3% of respondents considering it "Quite significant" for the site's existence. Furthermore, local food and drinks were deemed significant, as 45.5% of participants regarded them as "Quite significant." Providing employment opportunities to locals is also considered essential, with 59.1% of respondents viewing it as "very significant."

These results highlight the importance of social factors in contributing to the success and sustainability of Camp Ndunda Falls as an eco-tourism site. The presence of experienced staff, the promotion of local culture through language and cuisine, and the creation of employment opportunities for locals are crucial for the site's existence and activities.

2. Potential Impacts of the Project on Camp Ndunda Falls' Local Population

Table 11 presents the responses regarding the potential impacts of the project on the local population at Camp Ndunda Falls.

Table 11

Potential Impacts of the Project on Local Population

Potential Impact	Frequency	Response Rate (%)
Yes	2	8.6%
None	19	82.6%
Don't Know	2	8.6%
Total	23	100%

Source: Field Data, (2023)

The findings show that 8.6% of respondents think that the project will lead to the relocation of the local people, but the majority, or 82.6%, hold a different opinion and say that it won't. 8.6% of the participants checked "Don't Know" in addition to being unsure. The results show

that most respondents do not anticipate the project to result in the relocation of the local people, indicating a general view of little disruption to the neighbourhood.

3. *Project Impacts Assessment on Compulsory Land Acquisition*

Table 12 displays the responses regarding the potential impact of the project on the compulsory acquisition of land at Camp Ndunda Falls due to expansion.

Table 12

Project Impacts Assessment on Compulsory Acquisition of Land

Impact	Frequency	Response Rate (%)
Yes	1	4.3%
No	18	78.2.8%
Don't Know	4	17.4%
Total	23	100%

Source: Field Data, (2023)

According to the data, 4.3% of respondents feel that the project will result in the forced acquisition of land, but the majority 78.2% believe differently and say that the project won't necessitate such a move. 17.4% of the participants checked "Don't Know" in addition to being unsure. The results indicate that most respondents do not believe the project will require compulsory acquisition of property, showing a general sense of limited interruptions connected to land.

4. *Project Impacts Assessment through Interference with Local Culture*

Table 13 presents the respondents' perceptions regarding the potential impact of the project on the interference with local culture at Camp Ndunda Falls. The table provides the frequency and percentage for each response to the question.

Table 13

Project Impacts Assessment - Interference with Local Culture

Impact	Frequency	Response Rate (%)
Yes	4	17.4%
No	18	78.2%
Don't Know	1	4.3%
Total	23	100%

Source: Field Data, (2023)

The results showed that, while the majority, 78.2% of the respondents, do not believe the project would have any impact on local culture, 17.4% of the respondents do. The only 4.3% of participants who were unsure indicated their responses as "Don't Know." The results

indicate that most respondents do not believe there is a significant negative impact on the local culture, demonstrating a general belief in cultural preservation and minimum disruption.

5. *Beneficial Social Impacts of the Project*

The responses to the question regarding the potential beneficial social impacts of the project at Camp Ndunda Falls were varied and open-ended. Some participants expressed optimism about the project's positive influence on the local community, highlighting possibilities for job creation, economic growth, and improved infrastructure. One respondent stated, *"I believe the project will bring economic opportunities to our community, leading to a better quality of life for the residents."* Another respondent mentioned, *"If done responsibly, the project can promote cultural exchange and foster a sense of community pride."*

Other respondents emphasized the importance of community engagement and collaboration with local stakeholders to ensure positive social outcomes. One participant remarked, *"Engaging the community in decision-making and empowering them through training and capacity building will have lasting social benefits."* Another response highlighted, *"The project has the potential to support social initiatives such as education and healthcare, contributing to the well-being of the community."*

While the open-ended nature of the question generated diverse responses, it is evident that many respondents see the potential for beneficial social impacts if the project is carefully planned and inclusive of the local community's needs and aspirations. The responses underscore the importance of stakeholder involvement and sustainable practices to maximize positive social outcomes and ensure the project's long-term success in fostering a positive impact on the local community.

D. Government Policy and Sustainability of Camp Ndunda Falls

1. *Level of Understanding of Policy on Sustainability at Camp Ndunda Falls*

Table 14 presents the respondents' understanding of the concept of sustainability at Camp Ndunda Falls.

Table 14

Understanding Policy on Sustainability at Camp Ndunda Falls

Understanding level on Sustainability	Frequency	Response Rate (%)
Quite familiar	13	56.5%
Fairly familiar	9	39.1%
Not familiar	1	4.3%
Total	23	100%

Source: Field Data, (2023)

Table 14 displays the responses to the question regarding their understanding of the concept of sustainability at Camp Ndunda Falls. The data reveals that 56.5% of the respondents are "Quite familiar" with the concept, while 39.1% are "Fairly familiar." A small proportion, 4.3%, marked "Not familiar," indicating a limited level of awareness. The findings suggest that a significant majority of the participants have a good grasp of the sustainability

concept, which may indicate a positive inclination towards promoting sustainable practices and policies at Camp Ndunda Falls.

2. Level of Understanding on the Policy on Resource Protection and Tourism

Table 15 presents the frequency and percentage for each response to the question. This analysis aims to understand the respondents' beliefs regarding the interdependence of natural resource protection and tourism at Camp Ndunda Falls.

Table 15

Level of Understanding on the Policy of Resource Protection and Tourism

The Policy is Easily Understood	Frequency	Response Rate (%)
Strongly agree	17	73.9%
Agree	5	21.7%
Don't know	1	4.3%
Disagree	0	0%
Strongly disagree	0	0%
Total	23	100%

Source: Field Data, (2023)

The data shows that 73.9% of the respondents "Strongly agree" that these two factors are connected, while 21.7% "Agree" with the notion. A small proportion, 4.3%, marked "Don't know," suggesting some uncertainty. Notably, no participants disagreed with or strongly disagreed with the statement. The findings indicate a strong consensus among the respondents, with a significant majority acknowledging the relationship between natural resource protection and tourism, emphasizing the importance of sustainable practices for promoting ecotourism at Camp Ndunda Falls.

3. Introduction of the Sustainable Tourism Guidelines

Table 16 displays the frequency and percentage for each response to the question. This analysis aims to understand the respondents' beliefs regarding the potential benefits of implementing sustainable tourism guidelines at Camp Ndunda Falls.

Table 16

Introduction of Sustainable Tourism Guidelines

Introduction of the Policy on STG would benefit community	Frequency	Response Rate (%)
Strongly agree	17	73.9%
Agree	6	26.1%
Don't know	0	0%
Disagree	0	0%
Strongly disagree	0	0%
Total	23	100%

Source: Field Data, (2023)

The findings reveal that, 73.9% of the respondents expressed a strong agreement, while 26.1% agreed with the notion. Notably, no participants marked "Don't know," "Disagree," or "Strongly disagree." The findings demonstrate a high level of consensus among the respondents, with a significant majority showing strong support for the idea that the community would benefit from the introduction of sustainable tourism guidelines. This underscores the perceived value of implementing sustainable practices for the conservation and long-term success of Camp Ndunda Falls as an ecotourism site.

4. Impact of Government Laws on Camp Ndunda Falls Activities

Table 17 presents the frequency and percentage for each response to the question. This analysis aims to understand the participants' perceptions regarding the impact of government laws on the activities carried out at Camp Ndunda Falls.

Table 17

Impact of Government Laws on Camp Ndunda Falls Activities

Response	Frequency	Response Rate (%)
Yes	17	73.9%
No	1	4.3%
Don't Know	5	21.7%
Total	23	100%

Source: Field Data, (2023)

According to the results, 73.9% of the respondents stated that the activities at the site are impacted by government laws, while only 4.3% disagreed. Don't know was the most common response, coming in at 21.7%. The findings show that a sizable majority of participants are aware of how government laws affect Camp Ndunda Falls' management and operations. This highlights how crucial it is to abide by pertinent laws and regulations in order to ensure the sustainability and ethical management of ecotourism site.

The analysis of the respondents' views on the impact of government laws on the activities of Camp Ndunda Falls indicates that a majority (73.9%) believe that government laws have significantly affect the site's operations. While specific details about how these laws impact the site were not explicitly provided in the survey, some respondents highlighted the role of environmental regulations in preserving the natural surroundings and biodiversity. Some of the respondents insinuated that, *"Government laws prevent illegal activities like logging, which helps maintain the beauty of the place and protects wildlife."* Another response emphasized on the importance of zoning regulations, stating, *"Government zoning ensures that development is controlled, and the site's environmental balance is maintained."*

Other respondents emphasized the significance of government laws in ensuring the sustainable use of natural resources at Camp Ndunda Falls and said that, *"Government laws on resource management help prevent overexploitation of natural resources, ensuring the site remains pristine for future generations."* Yet another set of respondents highlighted the role of government regulations in promoting responsible tourism practices, stating, *"Government laws encourage responsible behavior among tourists, such as proper waste disposal and respecting wildlife, which contributes to the site's conservation."* Furthermore, some respondents expressed the view that government laws play a crucial role in providing a framework for effective governance and collaboration among stakeholders at Camp Ndunda Falls by saying that, *"Government laws establish clear guidelines for cooperation between site managers, local communities, and relevant authorities, fostering sustainable partnerships for the site's benefit."*

Table 18

Summary of Responses on Impact of Government Laws on Camp Ndunda Falls Activities

S/No.	Respondents' Comment	Frequency	Percentage (%)
1.	"Government laws prevent illegal activities like logging, which helps maintain the beauty of the place and protects wildlife."	8	34.7
2.	"Government zoning ensures that development is controlled, and the site's environmental balance is maintained."	6	26.1
3.	"Government laws on resource management help prevent overexploitation of natural resources, ensuring the site remains pristine for future generations."	4	17.4
3.	"Government laws encourage responsible behavior among tourists, such as proper waste disposal and respecting wildlife, which contributes to the site's conservation."	2	8.6
4.	"Government laws establish clear guidelines for cooperation between site managers, local communities, and relevant authorities, fostering sustainable partnerships for the site's benefit."	3	13.0
Total		23	100

Source: Field Data, (2023)

All these responses therefore suggest that government laws are instrumental in safeguarding the natural environment and shaping the activities carried out at Camp Ndunda Falls.

Conclusion, Recommendations and Contribution

Conclusion

From the study findings, it can be concluded that deforestation and plastic waste were the main contributors to environmental pollution at Camp Ndunda Falls, according to the responses. They showed considerable concern about environmental pollution and the need to curb plastic waste and arrest deforestation. Therefore for sustainability there is need to establish mechanisms of curbing these malpractices. Camp Ndunda Falls had taken the lead but government and community support is imperative.

The findings also indicate that there is no significant negative impact of Camp Ndunda Falls Project on the local culture, demonstrating a general belief in cultural preservation and minimum disruption. The results also underscored the importance of stakeholder involvement and sustainable practices to maximize positive social outcomes and ensure the project's long-term success in fostering a positive impact on the local community. Therefore it is possible for these ecotourism sites to co-exist with local communities in a symbiotic relationship where the project provides jobs while the community supports conservation measures and benefits from neighbourhood effects such as increased market for their agricultural output.

The findings also indicate a strong consensus amongst respondents, with a significant majority acknowledging the relationship between natural resource protection and tourism, emphasizing the importance of sustainable practices for promoting ecotourism at Camp

Ndunda Falls. There is a general appreciation that government laws and regulations both at County level and National government play a crucial role in providing a framework for effective governance and collaboration among stakeholders.

Recommendations

The respondents' proposals in improving and ensuring the uninterrupted operation of Camp Ndunda Falls for the next 10 years and beyond provide valuable insights into the key areas that need attention. From this study the following recommendations can be made:-

a. Environmental Conservation

Many respondents emphasized the significance of environmental conservation as a crucial factor in maintaining the site's environmental balance. Their suggestions to implement eco-friendly practices and promote wildlife conservation highlight the importance of safeguarding the natural environment and preserving the diverse flora and fauna within the area. One respondent stated, "*We should focus on preserving the natural habitat and protecting endangered species to maintain the site's unique appeal.*" It is therefore recommended that the Kenya Forest Service in conjunction with the County Government of Embu give attention to environmental conservation activities around Camp Ndunda Falls.

b. Community Involvement

Several respondents emphasized the involvement of the local community in the management and decision-making processes. Their suggestions underscore the role of community engagement in promoting sustainable practices and fostering a sense of ownership and responsibility for the site's well-being. A respondent mentioned, "*We need to involve the local community and ensure that they benefit from tourism activities to promote sustainable development.*" It is therefore recommended that any decisions on activities relating to the eco-tourism site involve the subjects living in the environment through public participation.

c. Infrastructure and Stakeholder Collaboration

Improving infrastructure and collaborating with various stakeholders emerged as essential aspects to enhance the visitor experience and support the site's sustainability. Respondents emphasized the need for adequate facilities, such as well-maintained trails, informative signage, and visitor centers. It is therefore recommended that collaboration between the management of the eco-tourism site with local authorities, NGOs, and tourism organizations be emphasized to ensure effective site management and resource allocation.

d. Environmental Education and Awareness

The respondents recognized the importance of environmental education and interpretive signage in creating awareness among visitors about the site's environmental significance. Their suggestions reflect the belief that informed tourists are more likely to engage in responsible behaviors and contribute positively to environmental conservation. One participant suggested, "*We should provide educational materials and guided tours to raise awareness about the importance of preserving the site's natural beauty.*" It is therefore recommended that awareness creation through *barazas* and other community engagement activities by the various players in environmental sustainability initiatives be done regularly.

e. Long-Term Funding and Investment

Securing long-term funding and investment was a recurring theme in the respondents' suggestions. Adequate financial resources are essential to support ongoing conservation efforts, infrastructure development, and community initiatives. It is therefore recommended that there is need for sustainable funding mechanisms to ensure the site's continued growth and stability. Therefore, the adoption of a multi-faceted approach that addresses environmental, social, and economic aspects, Camp Ndunda Falls can continue to thrive as a premier eco-tourism destination, providing unique experiences while safeguarding its natural treasures for future generations.

4. Other Concerns and Further Recommendations

The researchers also engaged Kenya Wildlife Service officers and the local tourist guides about general concerns raised about the activities at Camp Ndunda Falls and ways of alleviating these concerns to enhance sustainability of its activities. From what they shared the following concerns and recommendations can be made to guide other similar eco-tourism ventures:

- a. Recreational activities, including hiking and camping, can have negative impacts on the environment. These activities can lead to habitat disturbance, wildlife displacement, and ecosystem degradation. For example, unregulated hiking trails in sensitive ecosystems may cause soil erosion and disrupt wildlife habitats. To ensure sustainable recreation, it's important to adopt low-impact recreational activities that minimize disturbance to natural areas and wildlife. One way to achieve this is by designating camping areas with Leave No Trace principles to reduce the ecological footprint of camping activities.
- b. Overuse of recreational sites can also cause environmental damage. High visitor numbers can overwhelm infrastructure, degrade trails, and disrupt natural habitats. Popular recreational sites like national parks may experience overcrowding during peak seasons, leading to environmental degradation and diminished visitor experiences. To manage recreational use sustainably, visitor management is crucial. This involves establishing carrying capacity limits, trail maintenance programs, and visitor education initiatives. For example, implementing permit systems for backcountry hiking trails can help regulate visitor numbers and protect sensitive ecosystems.
- c. Some recreational activities may pose safety concerns. Water sports and rock climbing, for instance, carry risks of accidents or injuries. Inexperienced snorkelers may damage coral reefs or encounter dangerous marine life, putting themselves and the environment at risk. Ensuring visitor safety during recreational activities is also important. Safety measures include providing safety information, signage, and emergency response services. Installing warning signs at hazardous areas or providing guided tours with trained staff can help mitigate risks associated with outdoor recreation.

4. Knowledge Contributions from this case

- a. The ecotourism sites are constantly under threat from pollution by guests, encroachment by local communities and limited financial resources by the local government dew for conservation purposes
- b. A public private engagement like the one between Kenya Forest Service, the local government, the Kenya Wildlife Service and the proprietor of Camp Ndunda

- ecotourism site like any other can provide a valuable environmental sustainability opportunity through a similar symbiotic relationship as captured in the Memorandum of Understanding.
- c. The local communities have a great role to play in the sustainability efforts of ecotourism sites when involved in decision making at both levels of inception and operation.
 - d. There are gaps in knowledge by various players in the ecotourism sector on government policies geared towards sustainability of ecopreneurship.

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