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Assessing of Sustainability Practices in Protected Areas in Egypt in Light of IUCN Green List Standard

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Keywords

*Sustainability Practices,
Protected Areas,
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Abstract

The evaluation of sustainability practices in protected areas is of paramount importance in Egypt, given its rich natural and cultural heritage. This research assesses the current sustainability practices in Egypt's protected areas and examines their alignment with international standards. The researchers used the comprehensive inventory method. Data has been collected through questionnaires that were distributed to managers of terrestrial protected areas in the Red Sea, Sinai sector, north, center, and south Central District, Cairo, and environmental departments within the governorates of Cairo and Red Sea. Through a comprehensive review of literature and empirical analysis, key sustainability indicators such as biodiversity conservation, community engagement, and visitor management are evaluated. The study identifies Opportunities and Challenges in existing practices and provides recommendations for enhancing sustainability efforts. By benchmarking against international standards and best practices, Egypt can preserve the long-term ecological integrity and socioeconomic advantages of its protected areas. The research adds to the continuing discussion about sustainable tourism planning and conservation management in Egypt, as well as providing beneficial data for policymakers, conservation practitioners, and stakeholders.

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1. Introduction

According to (World Commission on Environment and Development (**WCED**), **1987**), the term of sustainability is at the center of current environmental management, attempting to balance economic progress, ecological conservation, and social justice (**Brundtland and Mansour, 2010**). Protected areas serve as safe places for biodiversity, defenders of cultural heritage, and catalysts for sustainable development within this framework (International Union for Conservation of Nature (**IUCN**), **2020**). The long-term welfare of Egypt's population and environment, a nation blessed with a variety of ecosystems and a rich cultural legacy, depends critically on the management of its protected areas.

Egypt's protected areas cover a wide range of ecosystems, from alpine regions and riverine systems to desert landscapes and coastal habitats. These areas serve as vital habitats for numerous plant and animal species, including endemic and threatened species such as the Nubian ibex and the Egyptian tortoise (**Attia et al., 2021**). Moreover, an abundance of archaeological monuments and cultural landmarks that cover millennia of human development and connection with the natural world may be found within Egypt's protected regions (**UNESCO, 2020**).

Egypt's protected areas are important ecologically and culturally, but they also face several threats, such as habitat deterioration, overuse of natural resources, and the effects of climate change (**El-Sayegh et al., 2020**). The fast increase of tourism, both domestic and international, places extra pressures on these fragile ecosystems, emphasizing the need for sustainable tourism planning and management (**Attalla et al., 2019**).

Assessing the sustainability practices used in Egypt's protected areas and determining if they comply with international standards and best practices is essential in light of these difficulties. By comparing its existing management practices to established frameworks like the International Union for Conservation of Nature (IUCN)'s Green List of Protected and Conserved Areas, Egypt may determine its strengths and shortcomings and prioritize areas for improvement (**IUCN, 2021**).

Research Problem:

The research problem lies in how to thoroughly assess the sustainability practices used in Egypt's protected areas and determine how well they conform to global standards and best practices. Though the significance of sustainable tourism planning is becoming more widely recognized, there is still an absence of comprehensive study about the efficacy of present approaches and their compliance with global conservation goals. Furthermore, challenges of habitat degradation, biodiversity loss, and social disparity within protected areas are increasing by the rapid increase of tourism, combined with rising demands from human activities and climate change. To successfully handle these complex problems, it is necessary to have a sophisticated awareness of the underlying causes of sustainability outcomes and to identify targeted actions that will strengthen conservation efforts and advance socioeconomic development. Therefore, the main goal of the research is to close the knowledge gap between theory and practice by presenting empirical data on the current status of sustainability practices in Egyptian protected areas and practical suggestions for enhancing their efficacy in accordance with international standards.

Research Questions:

RQ 1: What are the current sustainability practices employed in protected areas in Egypt?

RQ 2: What are the key indicators which used to assess sustainability in protected areas?

RQ 3: How are the indicators of assessing sustainability in protected areas are measured?

RQ 4: Do Egyptian environmental laws support the implementation of sustainable practices in protected areas?

RQ 5: What are the main challenges hindering the implementation of sustainable management practices in these areas?

RQ 6: How do these sustainability practices align with international standards and best practices?

Research aims and objectives:

The research aims to thoroughly evaluate the sustainability practices used in Egypt's protected areas and determine how well they comply with international standards and best practices. **There are specific objectives are targeted as follows:**

1. Exploring opportunities for enhancing sustainability practices in Egyptian protected areas through stakeholder engagement, capacity building, and adaptive management approaches.
2. Assessing the current state of sustainability practices within selected protected areas in Egypt.
3. Identifying indicators such as biodiversity conservation, community engagement, and visitor management to evaluate the status of selected protected areas in Egypt.
4. Examining the degree of alignment between sustainability practices observed in Egyptian protected areas and international standards and best practices.
5. Utilizing frameworks such as the IUCN Green List of Protected and Conserved Areas as a certified tool to evaluate the extent to which the management approach of protected areas in Egypt is in line with international standards for sustainability.

Research Importance:

It is critical to assess sustainability practices in Egypt's protected areas in the context of global standards for conservation and sustainable development initiatives in the area. Egypt's protected areas are important biological and cultural resources, it is critical to maintain their long-term viability for the preservation of cultural heritage, biodiversity conservation, and socioeconomic growth. In order to improve the ecological integrity and socioeconomic advantages of Egypt's protected areas, this research aims to provide evidence-based decision-making, policy formulation, and management strategies. It will do this by evaluating the efficacy of current practices and their conformity with international standards.

2. Literature Review

2.1. The Concept of Sustainable tourism development:

The Brundtland Commission has explained the concept of sustainable development as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (WCED, 1987, p. 43). The UN’s definition of the concept is underpinned by environmental benefits (minimization of negative tourism impacts, natural and cultural preservation and conservation, as well as efficient use of resources in tourism), economic benefits (importance of policy, planning, and management, emphasizing limits to tourism development, generation of economic profit for local people, and economic independence of local people), and social independence (participation and information, promotion of tourist observation and comprehension, and culture sensitivity towards local people and other stakeholders) (Borges *et al.*, 2011). The perspective also recognizes the harmful impacts of tourism on the local economy. To decrease and control the adverse effects of tourism growth, sustainable planning plays a crucial role (Wray, 2011).

2.2. Objectives of Sustainable Tourism Development

Sustainable development is to ensure the availability of sufficient resources for the population, equitable distribution of resources, economic progress, and environmental protection for the benefit of both current and future generations (Pan *et al.*, 2018).

The sustainable development of the tourism sector focuses on the realization of three basic goals: ecological goals such as the preservation of natural resources needed by the sector and the reduction of harmful emissions produced by the mentioned sector; economic objectives, Moreover, there are economic objectives include facilitating the local community's economic success and maintaining and making the best use of the infrastructure for tourists; social objectives. Moreover, there are social objectives include achieving adequate employment levels in the tourism sector; the provision of leisure activities for visitors and locals alike, the preservation of the area's culture and history, and a rise in locals' involvement in the developing of sustainable policies (Kapera, 2018). The Brundtland Commission Report and the Earth Summit, which are recognized as sustainable development initiatives launched by the World Conference on Environment and Development (WCED), which increased public awareness of the need for alternative tourism in the late 1980s and early 1990s (Butler, 2006). A number of international agreements have developed guidelines for the growth of sustainable tourism (World Tourism Organization and Organization of American States, 2018).

The 17 Sustainable Development Goals (SDGs):

As part of the 2030 Agenda for Sustainable Development, all United Nations Member States accepted the 17 Sustainable Development Goals (SDGs) in 2015. These objectives offer a common road map for achieving world peace and prosperity for all people. The 17 SDGs are as follows:



Figure (1): Sustainable Development Goals
 Source: United Nations, (UN), 2016.

The seventeen Sustainable Development Goals (SDGs) seek to ensure a sustainable future for all people while addressing a variety of global issues. These objectives include ending poverty and hunger, guaranteeing health and wellbeing, offering high-quality education, accomplishing gender equity, and guaranteeing access to inexpensive, clean energy, clean water, and sanitary facilities, as well as respectable employment and growth in the economy. The goals also address issues like industry, innovation, and infrastructure; they also address decreasing inequality; creating sustainable cities and communities; encouraging responsible production and consumption; addressing climate change; protecting terrestrial and marine ecosystems; advancing justice, peace, and powerful institutions; and cultivating partnerships for sustainable development. These interrelated objectives offer a thorough framework for addressing urgent global concerns and advancing equitable and sustainable development on a global scale.

Terrestrial protected areas around the world, including in Egypt, such as the Wadi El Gemal National Park and the St. Katherine Protectorate, are crucial refuges for biodiversity and ecosystems, matching with the Sustainable Development Goal "Life on Land". These zones protect natural ecosystems, combat desertification, and encourage sustainable land management processes. By maintaining forests, limiting soil erosion, and protecting distinct ecosystems, these protected areas help to halt biodiversity loss and preserve Egypt's natural heritage. Terrestrial protected areas contribute to a healthy planet by promoting effective conservation efforts and sustainable land-use practices of both current and future generations (**World Tourism Organization & Organization of American States, (2018).**)

2.3.Principles of protected areas:

The World Wildlife Fund (WWF) and International Union for Conservation of Nature (IUCN) / World Commission on Protected Areas (WCPA) WCPA have adopted principles and guidelines regarding indigenous rights and knowledge systems, consultation processes, agreements between conservation institutions, decentralization, local participation, transparency, accountability, sharing benefits,

and international responsibility. These guidelines are based on advice from the protected areas management categories, established policies from the World Wildlife Fund, the leading organization in wildlife conservation and endangered species, and the IUCN on indigenous peoples and conservation (**Ozyavuz, 2012**). The following are the five principles (**Piñeros, 2006**):

Principle 1: Native and other traditional peoples have long had relationships with nature and an in-depth awareness of it. They have frequently made important contributions to the preservation of many of the world's most endangered ecosystems through traditional sustainable resource use methods and cultural appreciation for environment. As a result, there should be no inherent conflict between the goals of protected areas and the presence of native people and other traditional peoples within and surrounding their boundaries.

Principle 2: The rights of indigenous and other traditional peoples to the traditional, sustainable use of their lands, territories, waters, coastal seas, and other resources should be fully respected in agreements made between conservation institutions, including protected area management agencies, and these groups regarding the establishment and management of protected areas affecting their lands, territories, waters, and other resources.

Principle 3: Decentralization, involvement, transparency, and accountability are concepts that need to be considered in any decision that affects the shared interests of indigenous and other traditional peoples and protected areas.

Principle 4: Recognizing the rights of all legitimate stakeholders, indigenous and other traditional peoples should be allowed to engage completely and fairly in the advantages of protected areas.

Principle 5: Since many of the lands, territories, waters, coastal seas, and other resources that indigenous and other traditional peoples own, occupy, or use cross national boundaries as do many of the ecosystems that require protection their rights regarding protected areas are frequently an international responsibility.

2.4.The IUCN Green List Standard:

The first global standard of best practices for area-based conservation, the IUCN Green List of Protected and Conserved Areas, or the "IUCN Green List Standard," is a new global standard for protected areas in the twenty-first century. This project certifies protected and conserved places that are properly and effectively administered, such as national parks, natural World heritage sites, community conserved areas, and so on. The goal of the IUCN Green List Standard is to enhance the contribution that fairly governed and well managed protected areas make to sustainable development through the preservation of nature and the provision of associated social, economic, cultural, and spiritual values. This aligns with the organization's core mission of "A just world that values and conserves nature" (**Maxwell, 2017**).

2.5. IUCN Green List programme objective:

The Green List initiative aims to expand the number of protected and conserved sites that achieve sustainable conservation objectives through strong governance, sound design, and effective and equitable management. The intention is to use the Standard in all regions and countries of the world, both on land and at sea. To accomplish this, the Standard was created to be global and adaptable to different nations and legal systems without sacrificing quality, as well as strong enough to ensure that sites demonstrate the fulfillment of conservation objectives. It is meant to be universally applicable and inclusive, not just for the most well-resourced locations or sites in the globe (**Hockings *et al.*, 2019**).

In general, the goal of the IUCN Green List program is to bring about positive improvements in how protected and conserved areas are managed and governed. This effort aims to help conserve biodiversity and maintain ecosystem services for both current and future generations.

3. Methodology

The research employs a descriptive analytical approach, whereby quantitative data is collected and analyzed through a questionnaire. The survey was made available to the terrestrial protected areas managers' and managers of environmental departments in (Environmental Affairs Agencies in the governorates of Cairo and Red Sea) online. The survey intends to identify current sustainability practices and indicators employed in protected areas in Egypt, aiming to inform policy reforms and improve conservation outcomes in alignment with international standards. To accomplish the overall aim of the study and its objectives, survey principles and the creation of the relevant questionnaire are provided below.

3.1. Data Collection

The researchers used the comprehensive inventory method. Data has been collected through questionnaires that were distributed to managers of terrestrial protected areas in the Red Sea (10 respondents'), Sinai sector, north, center, and south (22 respondents'), Central District, Cairo (14 respondents'), and environmental departments within the governorates of Cairo and Red Sea from January to March 2024.

3.2. Questionnaire Design and Measure

In order to support well-informed decision-making for management and conservation, this research seeks to evaluate the sustainability practices in Egyptian protected areas and verify whether they comply with international standards. Thus, it is necessary to create the mentioned questionnaire, which has the following format:

There are seven main sections to the questionnaire. The first section, which deals with demographic data, gives broad details about the managers, including their age, gender, degree of education, and years of experience. Eight variables that represented managing sustainable practices in Egyptian protected areas were included in the second portion (**Pan *et al.*, 2018**). Seven variables that represented opportunities for Egyptian protected areas were included in the third part. Current legislation for protected areas was represented by 17 variables in the fourth segment (**Lausche, 2011**). There were seven variables that represented governance in the fifth segment (**Jonas *et al.*, 2014**). Eleven variables that represented international standards were

included in the sixth part (Ozyavuz, 2012), as were nine factors that represented challenges to protected areas and their impacts. We were included in the seventh part. The questionnaire items were anchored according to the three-point Likert scale: "1 = disagree, "2 = neutral, and "3 = agree.

3.3.Data Validity and Reliability

The questionnaire was designed for managers of terrestrial protected areas and managers of environmental departments in (Environmental Affairs Agencies in the governorates of Cairo and Red Sea), with the goal of identifying strengths and weaknesses in sustainability practices within Egyptian protected areas, in order to inform policy reforms and improve conservation outcomes in accordance with international standards. Cronbach's alpha and factor analysis were used in this study.

3.3.1. Data Validity

To ensure that the format, readability, and measurement capabilities of the data collecting tool utilized in this study were all correct, the researcher distributed the questionnaire instrument to 46 managers in total. Following that, the questionnaire was revised and updated to reflect the input from the domain managers.

3.3.2. Data Reliability

For the sections of the questionnaire on Assessing Sustainability Practices in Egypt's Protected Areas in Light of the IUCN Green List Standard, Cronbach's Alpha (α) was calculated. Although varying studies have been conducted regarding acceptable Cronbach's Alpha values, a scale is deemed suitable for statistical model analysis if its value is higher than 0.7 (Nunnally, 1978). The Cronbach's Alpha value for each area of the pertinent questionnaire is displayed in the following table. The scale's very good dependability is indicated by a mark larger than 0.7. The results are highly relevant because this scale was developed independently utilizing the reviewed literature as a guide.

Table (1): Cronbach's Alpha Value

Variables	No. of Items	Cronbach's Alpha (α)	Validity Coefficient
Managing sustainable practices in Egyptian protected areas	8	.915	0.957
Opportunities to Egyptian protected areas.	7	.886	0.941
Current Legislations of protected areas	17	.862	0.928
Governance of protected areas	7	.742	0.861
International Standards	11	.790	0.889
Challenges to Protected Areas and their impacts	9	.789	0.889
Total	59	0.901	0.949

* Validity coefficient = $\sqrt{\text{Reliability coefficient}}$

Table 1 presents the findings of the Cronbach's alpha reliability analysis. The test findings show that the managers' reliability coefficients are equivalent to 0.901 and

the validity coefficient for every section of the manager's questionnaire is equal to 0.949. These results show that the instrument is appropriate for use.

3.4.Data Analysis

To achieve the goals of this research, the research processes data statistically using the Statistical Package for Social Sciences SPSS v25. This includes applying the following statistical techniques: Cronbach's alpha test, Pearson correlation analyses, standard deviations (SD), frequency distributions, percentages, and means.

4. Results and Discussion

4.1.Descriptive Analysis of Research Variables

Section one: Respondent's Demographic Characteristics

Table 2: Demographic profile of sample elements

Variable		Frequency	Percentage (%)
Gender			
	Male	36	78.3
	Female	10	21.7
Age			
	21-30 Years old	0	0
	31-40 Years old	14	30.4
	41-50 Years old	20	43.5
	51-60 Years old	8	17.4
	more than 60 Years old	0	0
Education Level			
	Bachelor's degree	8	17.4
	Master's degree	16	34.8
	Doctorate degree (Ph.D.)	22	47.8
Years of Experiences			
	1-2	0	0
	3-5	6	13.0
	6-10	14	30.4
	more than 10 years	26	56.5

According to Table (2), males account for 36 of the 46 responses, or 78.3% of the total. Females received ten responses, accounting for 21.7% of the total. The majority of responses (20) are from people aged 41 to 50, with 43.5%, followed by those aged 31 to 40, with 30.4% (14 responses). Furthermore, 8 participants (17.4%) of the sample are aged 51 to 60 years old. The level of education of the participants was 47.8% (22) with a PhD, followed by 34.8% (16) with a master's degree, and 17.4% (8)

with a bachelor's degree. Most of responses (56.5%, 26) had more than ten years of experience, followed by the range (6-10) years of experience, with 30.4% (14 responses) having between six and ten years of experience, and 13.0% of respondents (6) having three and five years of experience.

Section two: Managing sustainable practices in Egyptian protected areas

Table 2: Managing sustainable practices in Egyptian protected areas

Variables	Disagree	Neutral	Agree	Mean	SD	Rank	Attitude
Current management practices protect natural resources within protected areas in Egypt.	30.4	17.4	52.2	2.22	.792	3	Neutral
Management plans for protected areas in Egypt prioritize the use of renewable energy sources and energy-efficient infrastructure	34.8	8.7	556.5	2.22	.941	5	Neutral
Sustainable waste management practices, such as composting and recycling, are effectively implemented.	43.5	43.5	13.0	1.70	.695	8	Neutral
Reducing negative impacts on local communities and their livelihoods is among the goals of management practices in Egyptian protected areas.	21.7	13.0	65.2	2.43	.834	1	Agree
Natural reserve authorities in Egypt widely encourage sustainable tourism practices that reduce environmental impact and support local communities.	30.4	17.4	52.2	2.22	.892	4	Neutral
Research and development initiatives are carried out within protected areas in Egypt to identify and implement innovative solutions for sustainable resource management.	34.8	26.1	39.1	2.04	.868	6	Neutral
Authorities concerned with protected areas in Egypt cooperate with local communities to promote sustainable living practices.	17.4	39.1	43.5	2.26	.743	2	Neutral
The current level of awareness and capacity building among protected areas staff on sustainable management practices is considered sufficient.	43.5	21.7	33.8	1.91	.890	7	Neutral
Total mean				2.13			Neutral

Table (2) shows the manager's responses to (Managing sustainable practices in Egyptian protected areas), with means ranging from 2.43 to 1.70, compared to the total instrument mean for the domain (2.13). Reducing negative impacts on local communities and their livelihoods is among the goals of management practices in Egyptian protected areas rated highest as compared to the mean and standard

deviation of the entire instrument, with a mean and standard deviation of 2.43 and a standard deviation of 0.834. When compared to the mean and standard deviation of the total instrument, the final ranking of Sustainable waste management practices, such as composting and recycling, are effectively implemented within protected areas in Egypt resulted in a mean of 1.70 and a standard deviation of .695.

Section three: Opportunities to Egyptian protected areas

Table 3: Opportunities to Egyptian protected areas

Variables	Disagree	Neutral	Agree	M	SD	Rank	Attitude
There is collaboration between protected area authorities, tourism operators, and local communities	8.7	17.4	73.9	2.65	.640	2	Agree
Use of renewable energy sources and energy-efficient is provided.	8.7	21.7	69.6	2.61	.649	4	Agree
Responsible waste management and minimization of plastic is available.	13.0	26.1	60.9	2.48	.722	6	Agree
Limiting visitor numbers and implementing carrying capacity assessments	8.7	26.1	65.2	2.57	.655	5	Agree
Promoting local culture and handicrafts through tourism initiatives	0	26.1	73.9	2.74	.444	1	Agree
Investing in education and awareness programs for both tourists and residents	17.4	26.1	56.5	2.39	.774	7	Agree
Implementing strict regulations and penalties for environmentally damaging practices	13.0	8.7	78.3	2.65	.706	3	Agree
Total mean				2.58	Agree		

Respondents were questioned about their perceptions of the opportunities offered to Egyptian protected areas. Table (3) displays the means and standard deviations of (Opportunities to Egyptian protected areas), where the means ranged between (2.74-2.39) compared with the total instrument mean for the domain (2.58). Promoting local culture and handicrafts through tourism initiatives came in top place when compared to the mean and standard deviation of the total instrument (Mean = 2.74, Standard Deviation =.444).compared to the mean and standard deviation of the total instrument, the ranking of Investing in education and awareness programs for both tourists and residents that came in last had a mean of (2.39) and a standard deviation of (.774).

Section four: Current Legislations of protected areas

Table 4: Current Legislations of protected areas

Variables	Disagree	Neutral	Agree	Mean	SD	Rank	Attitude
The existing legislative framework in Egypt adequately addresses the principles of sustainable tourism planning in protected areas.	47.8	21.7	30.4	1.83	.877	15	Neutral
The weak legislative framework needs to better align with international standards for sustainable tourism planning in protected areas.	30.4	30.4	39.1	2.09	.839	11	Neutral
The current legislation related to tourism activities in protected areas is being effectively implemented.	30.4	39.1	30.4	2.00	.789	13	Neutral
The variety and quality of tourist activities available in protected area are good.	17.4	26.1	56.5	2.39	.774	3	Agree
There is a need for legislative reforms to address the challenges and opportunities emerging in sustainable tourism planning, such as adapting to climate change and integrating digital technology.	8.7	21.7	69.6	2.61	.649	2	Agree
The legal framework in Egypt encourages private sector investment in sustainable tourism ventures.	26.1	34.8	39.1	2.13	.806	8	Neutral
Legal provisions exist to mitigate the negative impacts of tourism infrastructure development on the natural ecosystems and cultural heritage sites within protected areas.	26.1	39.1	34.8	2.09	.784	10	Neutral
Existing laws and regulations provide clear guidelines for the sustainable development of tourism activities within Egyptian protected areas.	26.1	34.8	39.1	2.13	.906	9	Neutral
The inadequacy of methods for enforcing environmental laws and regulations to prevent unsustainable tourism practices within protected areas.	43.5	17.4	39.1	1.96	.918	14	Neutral
Governance structures promote social equity and inclusivity by involving marginalized communities and vulnerable	26.1	47.8	26.1	2.00	.730	12	Neutral

groups in the benefits of sustainable tourism activities in protected areas.							
Institutional mechanisms exist to address conflicts of interest and ensure accountability in decision-making processes related to tourism development in protected areas.	43.5	39.1	17.4	1.74	.743	16	Neutral
The governance framework supports the establishment of mechanisms for monitoring, evaluating, and managing in line with sustainable tourism practices within protected areas.	8.7	56.5	34.8	2.26	.612	6	Neutral
Multi-stakeholder partnerships are encouraged and facilitated to leverage resources and expertise for sustainable tourism initiatives in Egyptian protected areas.	33.4	3.3	63.3	2.30	.939	5	Neutral
Governance mechanisms prioritize the conservation of biodiversity and cultural heritage while promoting tourism development in protected areas.	26.1	21.7	52.2	2.26	.855	7	Neutral
Capacity-building initiatives are needed to strengthen the governance capacities of local authorities and community-based organizations involved in sustainable tourism management.	8.7	4.3	87.0	2.78	.593	1	Agree
Mechanisms for stakeholder engagement and participation are integrated into decision-making processes concerning tourism development within protected areas.	17.4	34.8	47.8	2.30	.756	4	Neutral
There is clarity and transparency in the roles and responsibilities of different government agencies, local authorities, and non-governmental organizations involved in sustainable tourism management.	47.8	30.4	21.7	1.47	.801	17	Disagree
Total mean				2.14	Neutral		

Table 4 lists the concerns that were asked regarding the weak points of the current protected area legislation. The results showed that the means and standard deviations of the domain of (Current legislation for protected areas) ranged from 2.78 to 1.47 when compared to the total instrument mean of 2.14. There is a need for capacity building initiatives to strengthen the governance capabilities of local authorities and community organizations involved in sustainable tourism management ranked first with a mean and standard deviation (Mean=2.78, standard deviation = .593) compared

with the total instrument mean and the standard deviation. Whereas, There is clarity and transparency in the roles and responsibilities of different government agencies, local authorities, and non-governmental organizations involved in sustainable tourism management ranked last reached a mean (1.47) and the standard deviation was (.801) compared with the mean and standard deviation of the total instrument.

Section five: The role of the Governance in achieving sustainable tourism

Table 5: The role of the Governance in achieving sustainable tourism

Variables	Disagree	Neutral	Agree	Mean	SD	Rank	Attitude
The current governance structure in Egypt effectively facilitates collaboration and coordination among stakeholders involved in sustainable tourism planning in protected areas.	43.5	39.1	17.4	1.74	.743	7	Neutral
There is transparency and accountability in decision-making processes related to tourism development in protected areas.	47.8	17.4	34.8	1.87	.909	6	Neutral
Local communities have significant representation and participation in the management of tourism activities in protected areas.	34.8	30.4	34.8	2.00	.843	4	Neutral
Existing governance structures effectively coordinate efforts between different stakeholders involved in sustainable tourism planning in Egyptian protected areas.	21.7	65.2	13.0	1.91	.590	5	Neutral
Collaboration between government agencies, local communities, and non-governmental organizations (NGOs) is essential for successful sustainable tourism planning in protected areas.	4.3	26.1	69.6	2.65	.566	3	Agree
Incorporating principles of sustainable tourism into local community development plans can help alleviate poverty and support conservation efforts in Egyptian protected areas.	4.3	17.4	78.3	2.74	.535	2	Agree
Capacity building and training programs for stakeholders are necessary to enhance sustainable tourism practices in Egyptian protected areas.	0	21.7	78.3	2.78	.417	1	Agree
Total mean				2.24			Neutral

Table (5) shows the means and standard deviations of the role of the Governance in achieving sustainable tourism, where the means ranged between (2.78-1.74) compared

with the total instrument mean for the domain (2.24). Capacity building and training programs for stakeholders are necessary to enhance sustainable tourism practices in Egyptian protected areas when compared to the total instrument mean and standard deviation, it ranked first (mean=2.78, standard deviation=.417).The current governance structure in Egypt effectively facilitates collaboration and coordination among stakeholders involved in sustainable tourism planning in protected areas when compared to the mean and standard deviation of the total instrument, those placed last had a mean of 1.74 and a standard deviation of .743.

Section six: International Standards

Table 6: International Standards

Variables	Disagree	Neutral	Agree	Mean	SD	Rank	Attitude
Egypt should prioritize the adoption and implementation of international standards (e.g., UNESCO World Heritage guidelines, IUCN recommendations) in its sustainable tourism planning efforts for protected areas.	0	4.3	95.7	2.96	.206	2	Agree
International collaboration and partnerships are essential for Egypt to enhance its capacity to meet global standards for sustainable tourism in protected areas.	0	0	100.0	3.00	.000	1	Agree
Egypt's adherence to international standards positively impacts its image and reputation as a responsible steward of protected areas.	32.1	3.6	64.3	2.32	.929	9	Neutral
There is a need for stronger mechanisms to ensure compliance with sustainable tourism guidelines and regulations in Egyptian protected areas.	9.2	4.3	86.6	2.77	.600	6	Agree
The implementation of international standards in sustainable tourism planning is feasible within the context of Egyptian protected areas.	10.5	10.2	79.3	2.69	.652	8	Agree
International standards, such as those outlined by the International Union for Conservation of Nature (IUCN), provide valuable guidelines for sustainable tourism planning in protected areas.	6.9	9.5	83.6	2.77	.563	5	Agree
International standards, such as those established by the Global Sustainable Tourism Council (GSTC), provide comprehensive guidelines for sustainable tourism planning in protected areas.	3.9	7.5	88.5	2.85	.458	3	Agree

International standards emphasize the importance of community engagement and empowerment in sustainable tourism decision-making processes within protected areas.	3.3	11.5	85.2	2.82	.463	4	Agree
Continuous monitoring and evaluation of tourism activities against international standards are essential for ensuring the long-term sustainability and integrity of protected areas in Egypt.	9.8	7.5	82.6	2.73	.629	7	Agree
The evolution of international standards reflects emerging trends and challenges in sustainable tourism, such as climate change adaptation, biodiversity conservation, and community resilience.	33.8	4.3	62	2.28	.938	12	Agree
International standards serve as a framework for promoting responsible tourism practices and minimizing negative impacts on the environment, culture, and communities in Egyptian protected areas.	32.1	4.3	63.3	2.31	.928	10	Agree
Total mean				2.68			Agree

Table (6) displays the means and standard deviations of (**International Standards**), where the means ranged between (3.00-2.28) compared with the total instrument mean for the domain (2.68). International collaboration and partnerships are essential for Egypt to enhance its capacity to meet global standards for sustainable tourism in protected areas ranked first with a mean and standard deviation (Mean=3.00, standard deviation = .000) compared with the total instrument mean and the standard deviation. The evolution of international standards reflects emerging trends and challenges in sustainable tourism, such as climate change adaptation, biodiversity conservation, and community resilience rated last achieved a mean of (2.83) and a standard deviation of (.383) when compared to the instrument's overall mean and standard deviation.

Section seven: Challenges to Protected Areas and their impacts

Table 7: Challenges to Protected Areas and their impacts

Variables	Disagree	Neutral	Agree	Mean	SD	Rank	Attitude
Illegal activities such as poaching and resource extraction pose a significant threat to wildlife and habitats within protected areas in Egypt.	4.3	8.7	87.0	2.83	.486	3	Agree
Protected areas in Egypt often lack sufficient funding and resources to effectively manage and conserve their natural resources.	4.3	13.0	82.6	2.78	.513	5	Agree

The current staffing and management capacity within protected areas in Egypt are inadequate to address existing challenges.	4.3	13.0	82.6	2.78	.613	7	Agree
Climate change and environmental degradation are major threats .	0	2.7	78.3	2.78	.417	4	Agree
Conflicts with local communities over resource use present a significant challenge for protected area management in Egypt.	8.7	8.7	82.6	2.74	.712	8	Agree
The introduction of invasive species into protected areas in Egypt poses a serious threat to native flora and fauna.	8.7	4.3	87.0	2.78	.593	6	Agree
Unsustainable tourism practices contribute to the challenges faced by protected areas in Egypt.	0	4.3	95.7	2.96	.206	1	Agree
The current challenges faced by protected areas in Egypt are likely to lead to a loss of biodiversity.	8.7	8.7	82.6	2.74	.742	9	Agree
The current efforts to address the challenges faced by protected areas in Egypt are not effective.	0	8.7	91.3	2.91	.285	2	Agree
Total mean					2.81	Agree	

The means and standard deviations of "Challenges to Protected Areas and Their Impacts" are displayed in Table 7. The means varied from 2.96 to 2.74 when compared to the domain's total instrument mean of 2.81. Unsustainable tourism practices contribute to the challenges faced by protected areas in Egypt. the total instrument mean and standard deviation, ranking first with a mean and standard deviation (mean = 2.96, standard deviation = .206). When compared to the mean and standard deviation of the entire instrument. The current challenges faced by protected areas in Egypt are likely to lead to a loss of biodiversity; the final ranking resulted in a mean of 2.74 and a standard deviation of 7.42.

Pearson Correlation Analysis:

Table (8) Correlation between managing sustainable practices in Egyptian protected areas and Current legislation regarding protected areas

		Managing sustainable practices in Egyptian protected areas
Current legislation regarding protected areas	Correlation Coefficient	.663**
	Sig.	.000

Table 8 demonstrates that there is a substantial correlation ($R = .663^{**}$, $p \leq .01$) between managing sustainable practices in Egyptian protected areas and current legislation regarding protected areas ($R = .663^{**}$, $p \leq .01$). These findings show that

managing sustainable practices in Egyptian protected areas and current legislation regarding protected areas are positively correlated.

Table (9) Correlation between Governance and the Current legislation regarding protected areas

		Governance
Current legislation regarding protected areas	Correlation Coefficient	.671**
	Sig.	.000

Table 9 demonstrates that there is a strong correlation. Between governance and the current legislation regarding protected areas ($R = .671^{**}$ $p \leq .01$). These findings indicate the beneficial relationship between governance and the current legislation regarding protected areas.

5. Conclusion and Summary

The study is to thoroughly evaluate the strategies for sustainability used in Egypt's protected areas and determine how well they adhere to global standards and best practices. The study aims to evaluate the advantages and disadvantages of the current management practices and to prioritize steps for improvement by looking at important indicators of sustainability, such as community engagement, biodiversity conservation, and visitor management. Furthermore, the research is going to study the obstacles and limitations to the implementation of sustainable management practices in Egyptian protected areas, as well as the role of policy frameworks and regulatory procedures in promoting sustainability. Through empirical analysis and stakeholder engagement, the study aims to provide valuable insights into the effectiveness of current sustainability practices and identify opportunities for enhancing conservation outcomes and fostering socio-economic development in Egypt's protected areas. In addition to identifying areas for improvement and offering practical suggestions for practice and policy, all of these goals seek to give a thorough assessment of sustainable practices in Egyptian protected areas and their compliance with international standards. The following outcomes were attained:

- Managing sustainable practices in Egyptian protected areas attempts to minimize negative impacts on local communities' livelihoods.
- The current legislation for protected areas aims to enhance the governance abilities of local authorities and community organizations involved in sustainable tourism management.
- Governance. Stakeholder capacity building and training programmes are required to improve sustainable tourism practices in Egypt's protected areas.
- The most significant international standards, International collaboration and partnerships are essential for Egypt to enhance its capacity to meet global standards for sustainable tourism in protected areas.
- Unsustainable tourism management's practices cause issues for Egypt's protected areas.
- There is a significant relationship between managing sustainable practices in Egyptian protected areas and current legislation regarding protected areas.

- There is a significant relationship between governance and the current legislation regarding protected areas.

Finally, comparing sustainability practices in Egypt's protected areas to international norms indicates both strengths and opportunities for improvement in the management of these crucial natural resources. While Egypt is committed to conservation and heritage preservation, there are significant gaps in matching local practices with global sustainability criteria. Addressing these gaps requires an integrated strategy that includes policy reform, stakeholder engagement, and capacity building. By incorporating sustainability principles into protected area management plans and encouraging collaboration among multiple stakeholders, Egypt can improve the resilience of its natural ecosystems while also promoting socioeconomic development and cultural preservation.

6. Recommendations

In order to promote sustainable tourism practices that support the long-term protection and preservation of Egypt's protected areas, these suggestions are intended to serve as a guide for legislators, government agencies, conservation organizations, local communities, and tourism operators. Based on an assessment of sustainable practices in Egypt's protected areas in comparison to international standards:

1. The government should be Policy Reform and Enforcement Strengthening: Encourage the update and reform of Egypt's protected area laws to better conform to global guidelines for the development and administration of sustainable tourism. Stricter enforcement measures should be put in place to guarantee adherence to environmental laws and policies.
2. The Ministry of Tourism and Antiquities should be Promotion of Sustainable Tourism Practices: Encourage tourist operators and guests to embrace sustainable tourism practices such as low-impact tourism activities, waste reduction strategies, and cultural sensitivity training. Promote responsible tourism behavior by conducting education and awareness programmes for both tourists and local populations.
3. The Ministry of Tourism and Antiquities and the Ministry of Environment should be Monitoring and Evaluation Mechanisms: In order to determine if sustainable methods in protected areas are effective, it is important to reinforce monitoring and evaluation systems. Create criteria and indicators to monitor the advancement of sustainability objectives, assess the effects of tourism on cultural heritage and biodiversity, and pinpoint areas in need of development.

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تقييم ممارسات الاستدامة في المحميات الطبيعية البرية في مصر في ضوء معايير القائمة الخضراء للاتحاد الدولي لحفظ الطبيعة

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المستخلص

ويحظى تقييم ممارسات الاستدامة في المناطق المحمية بأهمية قصوى في مصر، نظرًا لتراثها الطبيعي والثقافي. يهدف هذا البحث الي تقييم ممارسات الاستدامة الحالية في المناطق المحمية في مصر، ويستكشف مدى توافقها مع المعايير الدولية. واستخدم الباحثون أسلوب الجرد الشامل. تم جمع البيانات من خلال استبيانات تم توزيعها على مديري المحميات الأرضية بالبحر الأحمر وقطاع سيناء وشمال ووسط وجنوب المنطقة الوسطى بالقاهرة وإدارات البيئة بمحافظة القاهرة والبحر الأحمر. من خلال مراجعة شاملة للأدبيات والتحليل التجريبي تم تقييم مؤشرات الاستدامة الرئيسية مثل الحفاظ على التنوع البيولوجي، وإشراك المجتمع، وإدارة الزوار. وتحلل الدراسة الفرص المتاحة للمحميات الطبيعية في مصر والتحديات التي تواجهها، وجاءت التوصيات من خلال المقارنة مع المعايير الدولية وأفضل الممارسات حتي يتم تعزيز جهود الاستدامة. ومن ثم تستطيع مصر الحفاظ على السلامة البيئية والمزايا الاجتماعية والاقتصادية لمناطقها المحمية على المدى الطويل. ويوصي البحث إلى ضرورة النقاش المستمر حول تخطيط السياحة المستدامة وإدارة الحفاظ

الكلمات الدالة

ممارسات الاستدامة، المحميات الطبيعية البرية، المعايير الدولية، مصر.

على البيئة في مصر، فضلاً عن توفير بيانات مفيدة لواضعي السياسات
وممارسي الحفاظ على البيئة وأصحاب المصلحة.