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ROLE OF GOVERNANCE IN MANAGEMENT OF CONSERVATION AREAS

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ABSTRACT

Conservation areas are patches of unique natural landscapes and vital component of the environment inhabiting valuable ecosystem. They play significant role in sustainability of the natural system and humans in general. Due to their significance, their management becomes necessary. They were seen as a communal resource, and used for several functions ranging from social, economic, cultural to religious purposes. They were also managed by the local and traditional people. However, in the 19th century, the areas were hijacked by governments and international organizations, where formal governance of the areas replaced the traditional one. The International Union for Conservation of Nature (IUCN) framework stands as a model for effective management of conservation areas and in determining their performance at either individual or system level. The body has also developed different methodologies for assessing effective management of conservation areas. Yet, management of several conservation areas across the globe have been reported ineffective, and most of those in the developing and under developed worlds are threatened by managerial factors. These have triggered the need for proper governance of conservation areas. This can be attributed to form of governance of the areas. These have subjected conservation areas to several forms of degradation, de-reservation, delisting from IUCN database because they have become empty forest or paper parks. Recently, shared governance has been adopted in environmental management, where nature and conservation areas are managed effectively through involvement of public/local communities/indigenous people and stakeholders in the management of process. This has been proven to contribute significantly in effective management and better performance of the areas. This is evident in many conservation areas around the globe. This is because the public/local people can have sense of belonging and ensure their sustainability. Effective management of the areas depends heavily on capacity of the government, which is a combination of several factors/requirements/indicators. Similarly, percentage of conservation areas adequately protected and managed indicates the level of commitment of a nation towards achieving sustainability, which is measured by its ability to deliver benefits at all levels.

1 CONSERVATION AREA MANAGEMENT

Management is a term used across different fields with a different meaning. In the field of environmental management, the term management is defined as “the combination of actions with a legal, political, administrative, research, planning, protective, coordinating, interpretative or educational character, that results in the better use and performance of a conservation area, as well as the accomplishment of its objectives” [1]. Management of conservation areas is a complex one and therefore requires multi-disciplinary approach with the involvement of different professionals such as planners, managers, environmentalist, ecologist, biologist, researchers, politicians, stakeholders and local communities. Studies have shown that multi-stakeholder participation is necessary for effective management of conservation areas [2], [3].

The 20th century has witnessed a substantial development in the conservation area estate, with over 200,000 conservation areas across the globe, covering 28.4 million km² [4]. This led to the establishment of agencies purposely to manage these areas. Similarly, several international agencies such as the International Union for Conservation of Nature (IUCN) established in 1948, World Wide Fund (WWF) for Nature established in 1961 are concerned with managing conservation areas around the world due to their local, regional and global importance. In Nigeria, investment in conservation area management also continue to increase, as both governmental and non-governmental organizations contribute funds, equipment, facilities, and personnel for managing nature/conservation areas. Yet, these areas are poorly managed and continuously threatened by the activities of humans who are either from the local communities surrounding these areas or from far distance [5], [6], [7].

The growth in number and size of conservation areas result to increasing concern about their management by national and international bodies. The International Union for Conservation of Nature (IUCN) is among the leading international bodies that play significant role in management of conservation areas, to an extent of developing a framework for protected area management in 2006 [8]. The framework focuses on six elements of protected area management cycle namely: context, planning, input, process, output, and outcome. The framework has in the last decade become conservation area management theory for effective management and governance of the areas. The IUCN has recorded a remarkable achievement in the field of conservation area management. It has established standard criteria for the categorization of conservation areas into seven categories as in Table 1, which is accepted worldwide. To date, it is the universal and the only accepted criteria used for categorization of conservation areas for inclusion in the World Database on Protected Areas (WDPA).

Table 1: IUCN management categories and their definition

IUCN Category	Definition
Ia	Strict Nature Reserves: are strictly protected areas set aside to protect biodiversity and also possibly geological/geomorphological features, where human visitation, use, and impacts are strictly controlled and limited to ensure the protection of the conservation values. Such protected areas can serve as indispensable reference areas for scientific research and monitoring.
Ib	Wilderness Area: protected areas are usually large unmodified or slightly modified areas, retaining their natural character and influence, without permanent or significant human habitation, which is protected and managed so as to preserve their natural condition.
II	National Park: protected areas are large natural or near natural areas set aside to protect large-scale ecological processes, along with the complement of species and ecosystems characteristics of the area, which also provide a foundation for environmentally and culturally compatible spiritual, scientific, educational, recreational and visitor opportunities.
III	Natural Monument or feature: protected areas are set aside to protect a specific natural monument, which can be a landform, sea mount, submarine cavern, geological features such as a cave or even a living feature such as an ancient grove. They are generally quite small

	protected areas and often have high visitor value.
IV	Habitat/Species Management Area: protected areas aim to protect particular species or habitats and management reflects this priority. Many category IV protected areas will need regular, active interventions to address the requirements of particular species or to maintain habitats, but this is not a requirement of the category.
V	Protected Landscape/Seascape: a protected area where the interaction of people and nature over time has produced an area of distinct character with significant ecological, biological, cultural and scenic value: and where safeguarding the integrity of this interaction is vital to protecting and sustaining the area and its associated nature conservation and other values.
VI	Managed Resource Protected Area: protected areas conserve ecosystems and habitats, together with associated cultural values and traditional natural resource management systems. They are generally large, with most of the area in a natural condition, where a proportion is under sustainable natural resource management and where the low-level non-industrial use of natural resources compatible with nature conservation is seen as one of the main aims of the area.

Source: [9]

Since conservation areas are established for the purpose of protection of valuable biodiversity distributed along patches of unique natural landscapes, their management is of utmost importance. The modern conservation areas are managed by various agencies ranging from national governments coupled with one or more international organizations, non-governmental organizations, community-based organizations and local communities. Conservation areas according to [4] can deliver benefits such as biodiversity conservation, ecosystem services as well as maintenance of natural setting if properly managed. For the past three decades, management of conservation areas has shifted from traditional approach that excludes indigenous people and local communities in management and decision making [10]; to a new trend of multidisciplinary and multidimensional approach that encourages collaboration between conservation area managers, planners, decision makers, and local communities/indigenous people [11], [12], [13], [14]. This paradigm shift is due to increase in reported cases of conflict between conservation area management and local communities.

The debate about the management of conservation areas remains criteria to be used in gauging an area as a well-managed protected area. Well-managed conservation areas are those that mitigate habitat and biodiversity loss to the lowest level [15], [16], [17], [18]. Similarly, empirical study of 60 terrestrial conservation areas within the tropical region conducted by [19] reveals that conservation areas produce a positive outcome with regards to biodiversity when they are well managed. A well-managed conservation area also provides ecosystem services such as the provision of clean water, moderation of climate, protection of wildlife among others [20], [21].

Even though there is no doubt that, well-managed conservation areas can deliver ecological, social and economic benefits for the well-being of both human race and the environment. However, achieving effective management of these areas depends on cumulative factors such as staffing, funding, resourcing, training among others that determine capacity to manage the conservation areas and the well-being of the local communities surrounding the conservation areas. The earlier relies on government support and interest in achieving environmental goals, while the later depends on the extent of consideration of local communities' well-being and realization of their existence around the conservation areas.

1.1 CONSERVATION AREA GOVERNANCE

Governance plays a significant role in the achievement of environmental conservation objectives. Governance in the field of conservation area management is defined by [13] as “the interactions among structures, processes, and traditions that determine how power and responsibilities are exercised, how decisions are taken and how citizens or other stakeholders have their say”. In a similar definition, [22] refers to governance as “who holds management authority and responsibility and can be held accountable according to legal, customary or otherwise legitimate rights”. In the field of conservation area management, four types of governance have been recognized [9], [23], [24]: Type A (governance by the government): this is a government-managed conservation area. The government or its agencies have the sole authority, responsibility, and accountability for managing conservation areas. Type B (shared governance): the management responsibility of conservation areas rest on more than one body or agency. This can be formal or informal, and it is sometimes known as co-management or collaborative management. An example where shared governance has yielded better outcome in Malaysia, where a study conducted by [25], on the management of conservation areas involving local people reveals having significantly contributed to the effective management of marine protected areas. Type C (private governance): conservation areas, in this case, is governed privately, either by an individual, cooperative, Non-Governmental Organization (NGO) or non-profit organization. Privately governed conservation areas have been successful in effective management [26], [27]. Type D (governance by indigenous people and or local communities): this form of governance is sub-divided into two. Conservation area owned and governed by the indigenous people, and conservation areas established/managed by the local communities.

It is pertinent to note that, fair and transparent governance that allows participation of the public yield better outcome. [28] states that, power influences suitable approach to management of environmental problems. [28] expressed concern that environmentally sound approaches may be ignored if they are against the interest of those in power. In Nigeria, key actors in conservation areas have expressed the need for good and effective governance for the sustainability of conservation areas [29].

1.1.1 PUBLIC PARTICIPATION IN CONSERVATION AREA MANAGEMENT

Historically, conservation areas have been habitat for a significant number of indigenous people and means of livelihood for local communities surrounding them. However, establishment, planning, and management of many conservation areas, especially in the developing world have neglected participation of the indigenous people and local communities surrounding them in the management of the areas [30]. Public participation is a significant component in the planning process, which allows the public and stakeholders express their views. [31] highlights that, participation of local communities/indigenous people in decision making about conservation areas can improve the well-being of the communities and as well contributes to the successful protection of the areas. Public involvement plays a significant role in striking balance between conservation area managers and indigenous/local people in terms of their needs/expectation and responsibilities towards protection and management of the areas. Involvement of the public particularly the indigenous and local communities in conservation area management increases their awareness of the importance of biodiversity conservation and the tendency of the areas to be successfully managed [32], [33], [34], [35], [36].

On the other hand, ignoring the role of local communities in resource management may increase difficulties in management and resolution of a conflict between conservation area staff and local communities [37]. [38] emphasizes that, neglect of indigenous and local people have been the genesis of conservation area degradation. The degradation is due to unsustainable human activities in form of encroachment, harvesting of conservation areas' resources beyond the way nature can replenish them. Similarly, [39] attribute conflicts between indigenous people and conservation area managers to inadequate or absence of transparency and participation of the public in planning and management process of the area.

There has been a debate about the extent of participation of local communities in the management process. [40] identifies five typologies of public participation in planning and management of the conservation areas as shown in Figure 3. Members of the local communities should be actively involved in programmes and activities pertaining the conservation areas and their management. [40] describes this type of participation as “participation” that allows the people to “comment on draft plans of management, be able to represent their interest in advisory/management committees, become a member of a volunteer group and participate in public meetings on park management issues”.

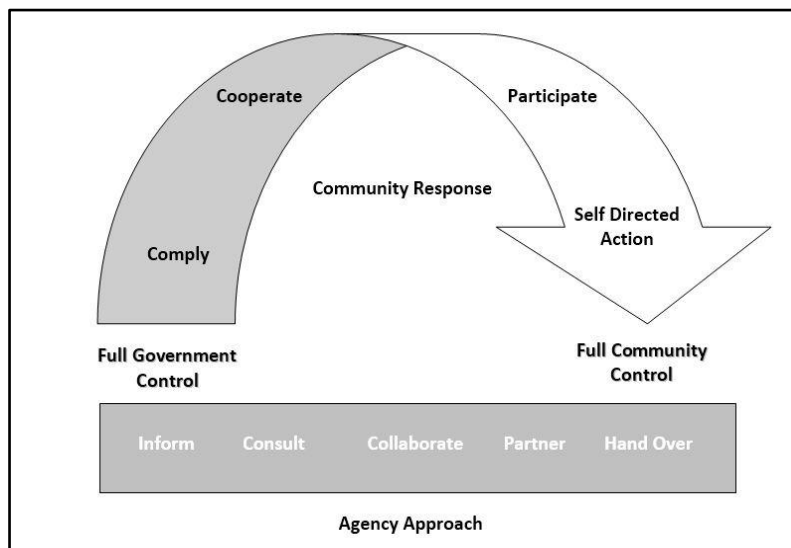


Figure 3: Public Participation Model
Source: [40]

Involvement of public in management planning is associated with several benefits such as: allowing the indigenous people and local communities to have sense of ownership of the conservation area, increases the level of support from the indigenous people/local communities and stakeholders; and increases level of commitment from these groups, as well serves as a medium for communication where relevant issues are raised and addressed accordingly [41]. Incorporating the indigenous/local people in planning and management processes of conservation areas is more of participatory approach, unlike the top-down approach being used by most government of the developing and under-developed nations.

The approach excludes indigenous/local people from the planning process, implementation, and management of the conservation areas. This is contrary to the comprehensive/rational planning approach which views things as inter-connected. The comprehensive approach according to [28] gained support from various disciplines and professionals such as ecologist/biologist, regional planners, economist and political scientist among others; and conservation area management requires a multi-disciplinary approach and multi-agency perspective [3]. In developing nations like Nigeria, public participation, particularly, the involvement of local communities is neglected in planning, decision-making and management processes. This has been the root causes of problems in several conservation areas because agencies responsible for management of the areas as well as managers feel that the local communities surrounding those conservation areas cannot play any role either because they do not possess the technical skill or they are a threat to conservation areas. According to [42], the planning process for conservation areas needs to accommodate public and stakeholders' interest in management.

1.2 CAPACITY TO MANAGE CONSERVATION AREAS

The term capacity as explained by [12] is the "potential of an entity to perform depending on its context". Capacity to manage conservation areas depends on three principal dimensions namely: system of governance, resources available and community support [43], [44] as shown in Figure 1 below. Similarly, [39] stress that lack of management plans, poor infrastructure, insufficient technical and financial resources are among factors that hinder effective management of conservation areas particularly in the developing and under-developed world. Other factors such as location of reserve, design and size can have significant impact on management. Management capacity is vital in determining effectiveness of conservation areas, as it determines the extent to which theory is put to practice.

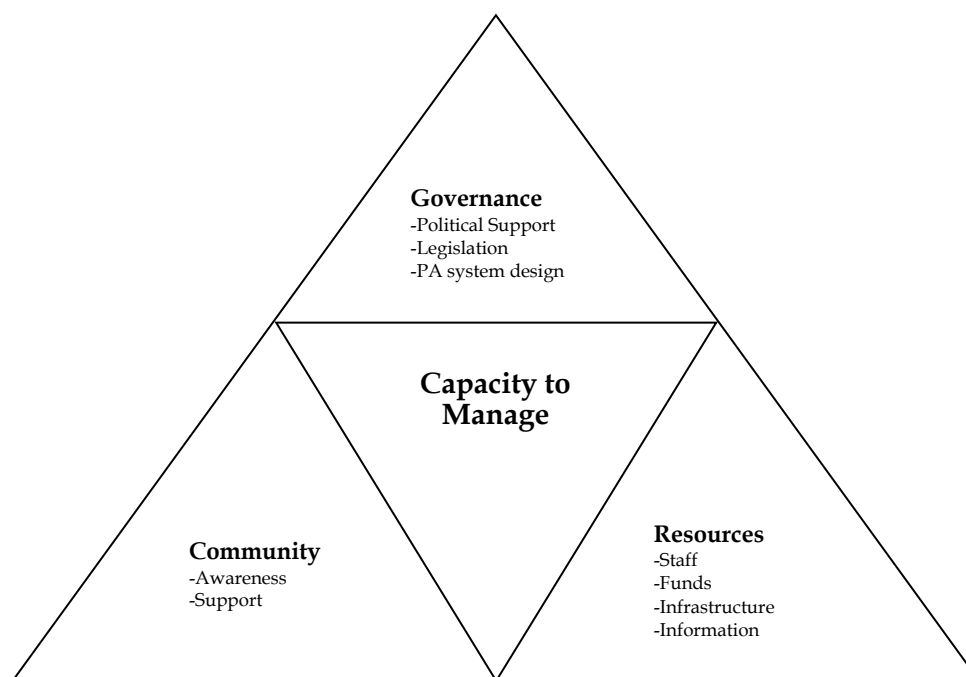


Figure 1: Capacity to Manage Conservation Areas
 Source: [43], [44]

Communities, particularly those that surround conservation areas have a vital role to play in managing the areas. This is because they are the next-door neighbours and have information of anyone who goes inside the conservation areas to carry out any form of activity. When these people are considered as stakeholders in management, they can provide vital information that can facilitate management of the conservation areas. Therefore, the need to take into consideration all these factors becomes necessary for better and effective management of conservation areas.

Similarly, [38], [45] emphasize that, lack of capacity to manage is a combination of factors such as lack of financial resources, staff and training; inadequate institutional capacity and infrastructure; inadequate information on the resources; lack of political and legislative support; non-involvement of indigenous people and local communities in planning, management and implementation; poor co-ordination between responsible agencies; inadequate enforcement tools; absence of land-use plans or management plans; unknown conservation area boundaries and absence of control over adjacent land-uses. Theoretically, several conservation areas, especially in developing countries exist officially in government documents and on plans, with legal backing. However, in practice, the situation is discouraging. This is what is described in literature as “paper parks” or “empty forest”. The term ‘paper park’ is an indicator of poor management. This according to [38] expose the conservation areas to several threats.

2 CONSERVATION AREA MANAGEMENT IN NIGERIA

Environmental protection and management can be traced back to the pre-colonial era by the traditional and local people. Historically, conservation areas were managed by the local and indigenous people. They see those areas as their resource and have adopted various strategies and local institutional arrangements for managing these resources, where some have achieved success in sustainable use [42]. Then, management was the sole responsibility of the traditional, indigenous and local people with their local rangers (popularly known as “Sarkin Daji”) until the 19th century. Later, the government took over the conservation areas, where the traditional guards were substituted with the present-day rangers, and the conservation areas became under the control of the government. In Nigeria, conservation areas are of three categories, and their management depends on the category: National Parks are the highest category, created, planned and managed by the Federal Government under the National Parks Service (NPS); the Game Reserves, Game Sanctuaries, and wetlands are the second category, created, planned and managed by the State Governments where the reserves exist; while the Forest Reserves and Community Forest areas are the third category, created and managed by the Local Governments in which they exist. In addition, several non-governmental organizations are involved in the management of the conservation areas irrespective of their categories.

Management of protected areas in Nigeria gained government support since the colonial era, where the Department of Forestry was established to oversee and manage the reserve's resources [32]. [47] categorized effort towards management and conservation

of conservation areas into three: at the first stage of management, hunting rights of the traditional/local people was restricted in the conservation areas in 1932; the second stage was to establish game reserves and other forms of conservation areas in the late 1950s so as to ensure effective management of resources; and the third stage was development of wildlife tourism in the 1970s with the aim of conserving endangered resources. In an effort to ensure effective management of conservation areas and their resources in Nigeria, the Nigerian Society for Environmental Management and Planning was created in 1983 with the aim of promoting, planning and management of the environment; developing policies; and conducting researches on the state-of-the-environment and its management. In addition, the Federal Environmental Protection Agency (FEPA) in Nigeria also plays a significant role in environmental management through the establishment of National Environmental Policy, guidelines, standards and criteria among others. Significant among the policies are to: (i) ensure quality of life and environment are adequate for better health and well-being of all Nigerians, (ii) conserve and utilize the environment and its natural resources sustainably so that both the present and future generations can reap the benefits, (iii) restore, maintain and enhance ecosystems, (iv) increase public awareness particularly on the relationship between environment and socio-economic development, (v) encourage communities and individuals to participate in effort towards environmental improvement, and (vi) collaborate with international bodies/agencies and NGOs to ensure proper protection and management of the environment. Similarly, a National Biodiversity Strategy and Action Plan was adopted in 1997 by the Federal Government. The primary aim of the plan is to conserve and enhance sustainable use of the nation's biodiversity and biological resources and to integrate biodiversity considerations in national planning policy and decision-making. These agencies work in collaboration with Federal Ministry of Environment in ensuring planning and implementing the outlined actions.

The Federal Environmental Protection Agency under Decree No 59 (1992) indicates that, it is its responsibility to protect and manage the environment (biodiversity and other natural resources) through comprehensive national policy and prepare master plans for managing these natural resources; the National Parks Service have mandated all conservation areas to prepare management plans; however, most of the conservation areas do not have management plans that guides protection and management activities. This has resulted in poor management of the conservation areas. They are continuously threatened by human activities [48], [49], [50], [51].

Yet, most of the management policies and programmes are not able to yield expected outcome in Nigeria [52]. Management of conservation areas in Nigeria is a top-down approach. This approach was put forward by the British Colonials, where conservation areas were established, planned and managed solely by the government, thereby setting aside the people, particularly local communities surrounding the conservation areas. This is through plan preparation and implementation of such plans without proper consideration of the role and well-being of the local communities. It is disturbing that the top-down management approach of the colonial era is still a common practice in managing conservation areas in most part of developing countries [32]. This is despite the exposure of the failure of the top-down approach by previous studies [53], [54], [55] that management of conservation areas are unable to achieve their primary objective of protection of their resources through proper management. However, this approach is still in practice in Nigeria, where government, through its institutions and agencies establish, plan and manage conservation areas.

To date, little if not nothing is known about the management of conservation areas and their ability to achieve effective management in Nigeria. Empirical research in this field is lacking and management records from agencies responsible for managing these conservation areas are not rarely available. Conservation area management effectiveness is still at infancy level [4], particularly in the developing nations.

2.1 CONSERVATION AREA LEGISLATION, POLICIES AND PROGRAMMES IN NIGERIA

The protection of reserves by legislation dates back to 1880s under Governor Alfred Maloney, during the British Administration. This led to the establishment of Forestry Department in 1897. Later in 1916, the Wild Animals Preservation Laws of Western Nigeria (Cap 132) emerged as the first law. This law was only applicable to the western part of the country. A decade after, the second law: Wild Animals Preservation Laws of Eastern Nigeria came into existence in 1928. The law was only applicable to the eastern part of the country. The last law which protected the northern reserves came up after three decades (three years after independence), which is the Wild Animals Laws in Northern Nigeria in 1963. Similarly, environmental protection in Nigeria received institutional support in 1901 with the establishment of forest ordinance, later the colonial township ordinance in 1917, which paved way for establishment of conservation areas [56], [57].

Later after the independence, a Decree emerged so that creation of reserves and national parks can have legal backing. Decree No. 46 of 1979 serves as a legal background for the creation and protection of reserves. National Guidelines and Standards for Environmental Pollution Control in Nigeria 1 (1991), Environmental Impact Assessment (EIA) Decree No 86 (1992), Natural Resource Conservation Action Plan were later established. Similarly, in an effort to meet the needs of global Agenda 21, Nigeria has also established some instruments such as National Policy on Environment (1989), and National Agenda 21 (1999). Decree 36 of 1991 was later set up to ensure proper management of conservation areas. However, the Decree was later modified in 1995 so as to overcome the weakness of the previous Decrees. The latest decree established for NPS is Decree 46 of 1999. The Decree is set up to improve management and conservation of National Parks in the country. At the same time, the Decree mandates all National Parks to prepare a comprehensive management plan for the parks. The plan according to [58] should consist of: (1) map of the park and proposed facili-

ties; (2) an inventory of resources in the park; (3) assessment of wildlife population trends in the park; (4) assessment of wildlife interference and plans for controlling it; (5) a description of proposed research activities, infrastructure development and wildlife resource management in the park; (6) plans for administration of the park; (7) plans to develop national and international tourism; (8) plans for the creation of buffer zones around the park and the participation of local communities in the management of the park; (9) plans for public participation in park activities; (10) plans to promote and assist in ensuring environmentally sound sustainable development in the areas surrounding the park, other buffer zones, for the purpose of protecting the areas.

After the commitment of the decree towards effective management of conservation areas through the preparation of the comprehensive plan, national parks across the country came up with plans that guides and manage the areas. However, this concept lost ground. Non-continuity with the concept due to lack of support from higher administrative authorities and non-implementation of previously prepared plans became the major setback. This according to [4] is due to lack of funds to implement the plans. In addition, only the higher order of conservation areas which are the national parks was able to meet this requirement. The game reserves/sanctuary, forest reserves, and wetlands did not have management plan even at that time, despite inhabiting valuable and unique biodiversity and unique landscapes. Currently, apart from the national parks that have management plans, some of which are outdated, few game reserves/sanctuary/wetlands/forest reserves have management plans prepared or sponsored by international organizations such as The Global Environment Facility. The concern is that, if the government and higher authorities give minimal support in preparation of the management plans, are they really going to support the implementation of the prepared plans?

In an effort to strengthen the protection and management of conservation areas in Nigeria, several policies and programmes were developed. The Support Zone Community Development Programme is among the significant programmes developed. This policy is integrated into section 49, sub-section (1) and (2) of the National Park Legislation. This policy plays a significant role in incorporating local communities in conservation area planning and management so as to achieve effective protection and management. The Support Community Zone Development Programme is a programme designed by the government purposely to empower the local communities surrounding the conservation areas and improve their well-being for the betterment of the conservation areas. This is through training them on poultry, craft, animal fattening, fish farming and small-scale trading.

2.2 ISSUES REGARDING CONSERVATION AREA MANAGEMENT IN NIGERIA

Conservation areas in Nigeria are poorly managed [5], [7], [29], and lack required protection in terms of training, patrol, enforcement [5], [45]. Biodiversity loss in Nigeria is at an alarming rate, and it is the combination of both human activities and managerial problems [59]. It has been estimated that 10% of the total land area designed as conservation areas in Nigeria are not able to achieve the target of conserving their 25% total landmass [53]. Similarly, according to [60], Nigeria is ranked third in the world that loses its forest resources, with a rate of -3.7% annual net loss between 2000-2010, and conservation areas are where the concentration of these resources are found. [58] states that, conservation areas in Nigeria are not effectively managed and their support zones are becoming threats to the areas. Environmental degradation has increased in many sites, illegal and extensive use of land, as well as unsustainable exploitation of conservation area resources becomes a common practice [5], [6], [22], [29], [37], [38], [47], [59], [61], [62], [63], [64].

2.3 CHALLENGES FACING CONSERVATION AREAS IN NIGERIA

Despite policies put in place to achieve effective management of conservation areas in Nigeria, the major challenge remains in the implementation of the policies for the purpose of achieving sustainability of the conservation areas. The non-implementation can be linked to inadequate funding by government and responsible agencies [65]. This has been ascertained by a study conducted by [4] which reveals that 50% of conservation areas in the West African countries have no funds that can facilitate implementation of their management plans. The plans are therefore kept as shelf documents. Staffing continues to decline due to the retirement of the existing one due to under-funding, it becomes difficult to recruit new staff. In addition, lack of timely review of the policies to fit in with the ever-changing nature of society and human activities. This is specifically to the fine imposed on offenders. Since the inception of the policy, there was no review on the fines, and the value of the currency has dropped drastically, which made the fine to be bearable by the offenders.

3 FRAMEWORK FOR CONSERVATION AREA MANAGEMENT

The International Union for Conservation of Nature (IUCN) is an international body that is well known for categorization, conservation, and management of nature/conservation areas globally. The body established a database for nature/conservation areas which holds information for over 200,000 conservation areas distributed across 193 countries of the world. Nowadays, the body focuses more attention on evaluating management effectiveness of conservation areas across the globe. This led to the development of a theoretical framework for the comprehensive assessment of management effectiveness [8]. The framework consists of the six elements of the management cycle: context, planning, inputs, process, outputs and outcomes as in Figure 2.

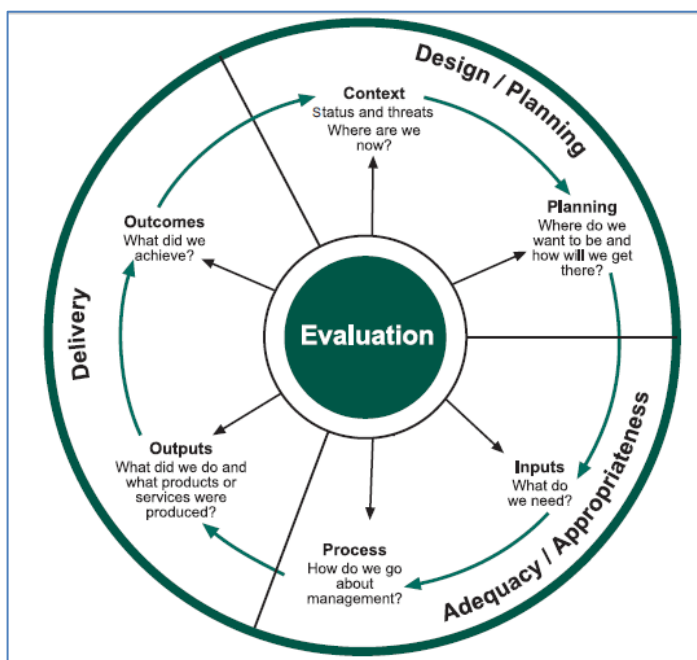


Figure 2: IUCN Framework for Protected Area Management Effectiveness
 Source: [8]

The purpose of the framework is to determine the performance and/or effectiveness of individual and network of conservation areas. Though evaluation can focus on each of the six components independently, but comprehensive evaluation gives a clear picture of issues related to a conservation area and their inter-relationships. The IUCN framework has been the concept as well as a model for assessment of conservation areas across the globe [8], [66], [67], [68]. Despite the development of the framework for assessing effectiveness of conservation areas, few conservation areas use the framework to determine their management effectiveness. [69] used the framework to assess management effectiveness of conservation areas in Iran, and [70], [71] used to assess selected protected areas across the globe using outlined indicators. However, choice of indicators depends on the purpose of assessment, or whether the focus of evaluation is on the system of reserves or individual conservation areas [44]. Such indicators according to the authors include threats to conservation areas; protected area legislation and policy; and resources.

Understanding what depicts an effective management is an on-going debate in the field of environmental conservation. For more than a decade, the IUCN framework has been used in managing and assessing management effectiveness of conservation areas globally. Yet, many conservation areas across the globe have been reported to be unable to provide effective protection for the areas against human activities, thereby resulting in declines in biodiversity and ecosystem services [4], [70]. Effective management of conservation areas have gone beyond coverage, to incorporate multi-stakeholders participating at different level of management and decision-making process. This call for improved strategy for effective management of conservation areas [4], [72]; through venturing into participatory approaches such as inclusion of local communities in management with the aim of striking a balance between environment, human needs and development [73], [74].

3.1 ASSESSMENT OF CONSERVATION AREA MANAGEMENT EFFECTIVENESS

Assessment in the context of conservation area management effectiveness is defined by IUCN as “the judgment of achievement against some predetermined criteria (usually a set of standards or objectives); in this case including the objectives for which the protected/conservation areas were established” [44]. While management effectiveness evaluation has been defined as “as the assessment of how well the protected/conservation area is being managed – primarily the extent to which it is protecting values and achieving goals and objectives” [8]. Studies by [44], [71], [75] have expressed concern over management effectiveness of conservation areas and calls for more evaluation of protected/conservation areas management effectiveness. [9] presented over 50 methodologies for evaluating management effectiveness of conservation areas depending upon the focus of evaluation and suitability to each region. Out of the methodologies, the Management Effectiveness Tracking Tool (METT) has been frequently used in assessing management effectiveness of conservation areas. [8] added that, protected/conservation area management effectiveness evaluation reflect on: design issues relating to both individual sites and protected/conservation area system; adequacy and appropriateness of management systems and processes; and delivery of protected/conservation area objectives including conservation values.

[76] categorizes assessment of conservation areas into three stages depending on either the assessment is simple or detail. The first type of assessment is the system-wide assessment, which is the type of assessment that takes into consideration all conservation areas in a region or a country at large. The outcome of such assessments is significant in decision-making for conservation areas at either regional or national level. This type of assessment according to [44] takes into consideration “appropriateness of national conservation area legislation and policies; and plans of the protected/conservation area system”. Other issues that can be looked at, is ecological representatives and connectivity between conservation areas within a region and a country at large. The second type of assessment is portfolio-wide assessment, which involves all protected/conservation areas partaking in organization’s portfolio. The outcome of such assessment is important for decision making by funding organizations. The third type of assessment is site-specific assessment, which is the type of assessment that is based on a single conservation area. Such assessment is important for decision making at an individual site. According to [44], this form of evaluation focuses on status, threats, shape, size, location, management objectives and plans.

Assessment of protected/conservation area management effectiveness focuses on three dimensions: design/planning for individual and system of conservation area(s); adequacy/appropriateness of management systems and processes; and delivery of protected area objectives [8], [44]; using six elements of the framework as in Table 2.

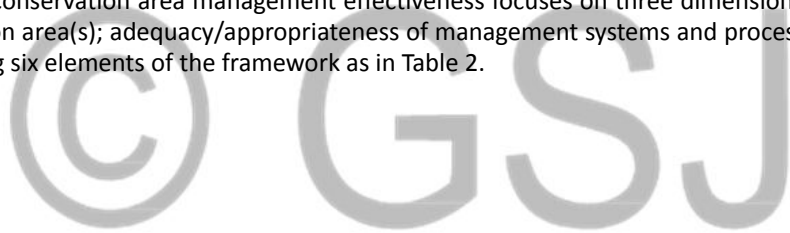


Table 2: Elements of Protected Area Management Effectiveness Evaluation

Elements of Evaluation			Criteria to be Assessed	Focus of Evaluation
Design/planning	Context	Assessment of importance, threats and policy environment	Significance /values Threats Vulnerability Stakeholders National context	Status
	Planning	Assessment of protected area design and planning	Protected area legislation and policy Protected area system design Protected area design Management planning	Appropriateness
Appropriateness /Adequacy	Inputs	Assessment of resources needed to carry out management	Resources available to the agency Resources available to the protected area	Resources
	Process	Assessment of the way in which management is conducted	Suitability of management processes and extent to which established or accepted processes are being implemented	Efficiency and appropriateness
Delivery	Outputs	Assessment of the implementation of management programmes and actions; delivery of products and services	Results of management actions Services and products	Effectiveness
	Outcomes	Assessment of the outcomes and the extent to which they achieved objectives	Impacts: effects of management in relation to objectives	Effectiveness and appropriateness

Source: [8]

3.2 ROLE OF CONSERVATION AREAS IN REALIZING SUSTAINABLE DEVELOPMENT

One of the Millennium Development Goals (MDG7) is environmental sustainability, and the key indicator to measure it is the percentage of area under protection [77]. The modern conservation areas are designed to meet the three dimensions of sustainable development. Environmentally, they protect and conserve valuable ecological components, offer environmental/ecosystem services and moderate climate [78], [79], [80], [81], [82], [83], [84]. The survival and well-being of human beings are highly determined by the environmental services of these conservation areas. From the economic point of view, conservation areas contribute significantly in providing employment opportunities and income generation from tourism and related activities [4], [21], [52], [85], [86], [87], [88]. The social benefits of conservation areas are: used as a ground for socialization, outdoor activities and appreciation of nature [4], [86], [89]. An interconnected network of conservation areas plays a significant role in the conservation of natural ecosystem, environmental management, socio-cultural values and associated benefits to human population. Nowadays, conservation areas tend to focus more towards achieving dimensions of sustainability [73], [90], [91], in-line with the following principles of sustainability outlined: (i) ability of the protected/conservation areas to deliver benefits at all scales (global, regional and local scales); (ii) different

stakeholders' interest should be incorporated in the management of protected/conservation areas; (iii) threats to conservation areas should be addressed through collaborative management, where local people, agencies at various scales and governments participate in the management; (iv) conservation areas should be incorporated into national land use plan [22].

4 Conclusion

Conservation areas are nature gifts to humans. Their role in existence of humans are numerous. Therefore, effective management of the areas becomes necessary. The management is not only the responsibility of the government through its agencies alone, but responsibility also extends on the public, particularly those around the conservation areas. The level of involvement of the public in the management process depends on the established framework, guiding principles by the government or those developed by Non-Governmental Organizations. Literature indicate that, active participation of the public or local communities in management of conservation areas yields a better and desired conservation outcome; and easy way of achieving conservation goals. Despite the legal and theoretical provisions, conservation areas particularly those in the developing and under-developed nations are faced with several issues and management challenges. The impacts of the local issues and challenges faced by the conservation areas may have regional and or global impacts. This is the reason why main reason why international organizations/bodies are so much concerned about management of conservation areas, thereby providing different forms of support for effective conservation of the areas by striking a balance between human needs and environmental sustainability.

References

- [1] Cifuentes MA, Izurieta AV, Faria HH. Measuring Protected Area Management Effectiveness. Technical Series No. 2. WWF: IUCN: GTZ. 2000.
- [2] Fiorino T, Ostergren D. Institutional Instability and the Challenges of Protected Area Management in Russia. *Society and Natural Resources*. 2012; 25(2): 191-202.
- [3] Margerum RD. Integrated Environmental Management: Moving from Theory to Practice. *Journal of Environmental Planning and Management*. 1995; 38(3): 371-392.
- [4] Watson JE, Dudley N, Segan DB, Hockings M. The Performance and Potential of Protected Areas. *Nature*. 2014; 515(7525): 67-73.
- [5] United States Agency for International Development (USAID). Nigeria Biodiversity and Tropical Forestry Assessment: Maximizing Agricultural Revenue in Key Enterprises for Targeted Sites (Markets). Chemonics International Inc. 2008.
- [6] Mohammed I, Shehu AI, Adamu MB, Saleh UF. Comparative Analysis of Fauna Numerical Characteristics of Yankari Game Reserve from 1980-2008. *Environmental Research Journal*. 2010; 4(2): 177-181.
- [7] Usman BA, Adefalu LL. Nigerian Forestry, Wildlife and Protected Areas: Status Report. *Tropical Conservancy*. 2010; 11(3-4): 44-52.
- [8] Hockings M, Stolton S, Leverington F, Dudley N, Courrau J. Evaluating Effectiveness: A Framework for Assessing Management Effectiveness of Protected Areas. 2nd Edition. IUCN, Gland, Switzerland and Cambridge. UK. 2006.
- [9] Leverington F, Hockings M, Pavese H, Costa KL, Courrau J. Management Effectiveness Evaluation in Protected Areas - A Global Study. Supplementary Report No. 1: Overview of Approaches and Methodologies. The University of Queensland, Gatton, TNC, WWF, IUCN-WCPA, Australia. 2008.
- [10] Brockington D, Igoe J. Eviction for Conservation: A Global Overview. *Conservation and Society*. 2006; 4(3): 424.
- [11] Nakakaawa C, Moll R, Vedeld P, Sjaastad E, Cavanagh J. Collaborative Resource Management and Rural Livelihoods Around Protected Areas: A Case Study of Mount Elgon National Park, Uganda. *Forest Policy and Economics*. 2015; 57: 1-11.
- [12] Brooks J, Waylen KA, Mulder MB. Assessing Community-Based Conservation Projects: A Systematic Review and Multilevel Analysis of Attitudinal, Behavioral, Ecological, and Economic Outcomes. *Environmental Evidence*. 2013; 2(1): 2.
- [13] Nielsen G. Capacity Development in Protected Area Management. *International Journal of Sustainable Development and World Ecology*. 2012; 19(4): 297-310.
- [14] Lockwood M. Good Governance for Terrestrial Protected Areas: A Framework, Principles and Performance Outcomes. *Journal of Environmental Management*. 2010; 91(3): 754-766.
- [15] Edgar GJ, Stuart-Smith RD, Willis TJ, Kininmonth S, Baker SC, Banks S, et al. Global Conservation Outcomes Depend on Marine Protected Areas with Five Key Features. *Nature*. 2014; 506(7487): 216-220.
- [16] Geldmann J, Barnes M, Coad L, Craigie ID, Hockings M, Burgess ND. Effectiveness of Terrestrial Protected Areas in Reducing Habitat Loss and Population Declines. *Biological Conservation*. 2013; 161: 230-238.
- [17] Micheli F, Niccolini F. Achieving Success Under Pressure in the Conservation of Intensely used Coastal Areas. *Ecol. Soc*. 2013; 18(4): 19.
- [18] Joppa L, Pfaff A. Reassessing the Forest Impacts of Protection. *Annals of the New York Academy of Sciences*. 2010; 1185(1): 135-149.
- [19] Laurance WF, Useche DC, Rendeiro J, Kalka M, Bradshaw CJ, Sloan S P, et al. Averting Biodiversity Collapse in Tropical Forest Protected Areas. *Nature*. 2012; 489(7415): 290-294.
- [20] Hassan A, Johar F, Rafee M, Idris NM. Protected Area Management in Nigeria: A Review. *Jurnal Teknologi*, 2015; 77: 15; 31-40.
- [21] Dudley and Stolton. Running Pure: The Importance of Forest Protected Areas to Drinking Water. A Research Report of the World Bank/WWF Alliance for Forest Conservation and Sustainable Use. 2003.

- [22] Mulongoy JK, Chape SP. Protected Areas and Biodiversity: An Overview of Key Issues. CBD Secretariat, Montreal, Canada and UNEP-WCMC, Cambridge, UK. [Eds]. 2004.
- [23] Borrini-Feyerabend G, Dudley N, Jaeger T, Lassen B, Pathak Broome N, Phillips A, Sandwith T. Governance of Protected Areas: From Understanding to Action. Best Practice Protected Area Guidelines Series No. 20, Gland, Switzerland: IUCN. 2013: xvi + 124pp.
- [24] Graham J, Amos B, Plumpre T. Governance Principles for Protected Areas in the 21st Century. A Paper Prepared for The Fifth World Parks Congress Durban, South Africa. Institute on Governance, in Collaboration with Parks Canada and Canadian International Development Agency. 2003.
- [25] Islam GMN, Tai SY, Kusairi MN, Ahmad S, Aswani FMN, Senan MKAM, Ahmad A. Community Perspectives of Governance for Effective Management of Marine Protected Areas in Malaysia. *Ocean and Coastal Management*. 2017; 135: 34-42.
- [26] Carter E, Adams WM, Hutton J. Private Protected Areas: Management Regimes, Tenure Arrangements and Protected Area Categorization in East Africa. *Oryx*. 2008; 42(02): 177-186.
- [27] Langholz J. Economics, Objectives, and Success of Private Nature Reserves in Sub-Saharan Africa and Latin America. *Conservation Biology*. 1996; 10(1): 271-280.
- [28] Briassoulis H. Theoretical Orientations in Environmental Planning: An Inquiry into Alternative Approaches. *Environmental Management*. 1989; 13(4): 381-392.
- [29] Wildlife Conservation Society. Nigeria Program Conservation Strategy. 2012-2016.
- [30] Ribot JC, Agrawal A, Larson AM. Recentralizing while Decentralizing: How National Governments Re-appropriate Forest Resources. *World Development*. 2006; 34(11): 1864-1886.
- [31] United Nations Environment Programme. Global Environmental Outlook: Environment for Development. UNEP, Nairobi, Kenya. 2007.
- [32] Gbadegesin A, Ayileka O. Avoiding the Mistakes of the Past: Towards a Community Oriented Management Strategy for the Proposed National Park in Abuja-Nigeria. *Land Use Policy*. 2000; 17(2): 89-100.
- [33] Stolton S. Issues that Arise for the Categories in a Changing World. *Parks*. 2004; 14(3): 63-71.
- [34] Hyakumura K. 'Slippage' in the Implementation of Forest Policy by Local Officials: A Case Study of a Protected Area Management in Lao PDR. *Small-Scale Forestry*. 2010; 9(3): 349-367.
- [35] Vodouhe FG, Coulibaly O, Adegbidi A, Sinsin B. Community Perception of Biodiversity Conservation within Protected Areas in Benin. *Forest Policy and Economics*. 2010; 12: 505-512
- [36] Bockstael E, Bahia NC, Seixas CS, Berkes F. Participation in Protected Area Management Planning in Coastal Brazil. *Environmental Science and Policy*. 2016; 60: 1-10.
- [37] Ogunjinmi AA, Ojo LO, Onadeko SA, Oguntoke O. An Appraisal of Environmental Interpretive Policies and Strategies of Nigeria National Parks. *Tropical Agricultural Research and Extension*. 2009; 12(1): 7-12.
- [38] Carey C, Dudley N, Stolton S. Squandering Paradise? The Importance and Vulnerability of the World's Protected Areas. Gland, Switzerland: WWF. 2000.
- [39] Kurdoglu O, Cokcaliskan BBA. Assessing the Effectiveness of Protected Area Management in the Turkish Caucasus. *African Journal of Biotechnology*. 2011; 10(75): 17208-17222.
- [40] Parks and Wildlife Commission. Public Participation in Protected Area Management Best Practice. Prepared for: The Committee on National Parks and Protected Area Management Benchmarking and Best Practice Program August 2002, by Parks and Wildlife Commission of the Northern Territory. 2002.
- [41] Thomas L, Middleton J. Guidelines for Management Planning of Protected Areas. IUCN Gland, Switzerland and Cambridge, UK. 2003: ix + 79pp.
- [42] Ontario Ministry of Natural Resources 2009. Ontario Protected Areas Planning Manual. Peterborough. Queen's Printer for Ontario. 2009: 50p.
- [43] Hockings M, Philips A. How Well Are We Doing? Some Thoughts on the Effectiveness of Protected Areas. *Parks*. 1999; 9(2): 5-14.
- [44] Hockings M, Stolton S, Dudley N. Evaluating Effectiveness: A Framework for Assessing the Management of Protected Areas. Gland (Switzerland): IUCN. 2000.
- [45] Kopylova SL, Danilina NR. Protected Area Staff Training: Guidelines for Planning and Management. Gland, Switzerland: IUCN. 2011: xiv + 102 pp.
- [46] Berkes F, Feeny D, McCay BJ, Acheson JM. The Benefits of the Commons: Commentary. *Nature*. 1989; 340: 91-93.
- [47] Osemeobo GJ. Land Use Policies and Biotic Conservation: Problems and Prospects for Forestry Development in Nigeria. *Land Use Policy*. 1990; 7(14): 314-322.
- [48] Aweto DO. Plantation Forestry and Forest Conservation in Nigeria. *The Environmentalist*. 1990; 10: 127-137.
- [49] Thompson JR, Hollis GE. Hydrological Modelling and the Sustainable Development of the Hadejia-Nguru Wetlands, Nigeria. *Hydrological Sciences Journal*. 1995; 40(1): 97-116.
- [50] Imasuen OI, Oshodi JN, Onyeobi TUS. Protected Areas for Environmental Sustainability in Nigeria. *Journal of Applied Sciences and Environmental Management*. 2013; 17(1): 53-58.
- [51] Oduntan OO, Soaga JAO, Akinyemi AF, Ojo SO. Human Activities, Pressure and its Threat on Forest Reserves in Yewa division of Ogun State, Nigeria. *Journal of Environmental Research and Management*. 2013; 4(5): 260-267.
- [52] Marguba LB. Protected Areas in National and Regional Development: The Road to Durban. Regional Protected Areas Workshop for West and Central Africa. Kribi: Cameroon. Technical Report compiled by Nayuh, L. and Bakarr, M.I. IUCN Regional Office for Central Africa; Center for Applied Biodiversity Science at Conservation International, and IUCN World Commission on Protected Areas. 2003.
- [53] Ite UE. New Wine in an Old Skin: The Reality of Tropical Moist Forest Conservation in Nigeria. *Land Use Policy*. 1998; 15(2): 135-147.
- [54] Ite UE, Adams WM. Forest Conservation, Conservation and Forestry in Cross River State, Nigeria. *Applied Geography*. 1998; 18(4): 301-314.
- [55] Poffenberger M. Keepers of the Forest: Land Management Alternatives in Southeast Asia. 1990;

- [56] Chokor BA. Environmental pressure Groups and Habitat Protection in the Developing World: The case of Nigeria. *Environmentalist*. 1992; 12(3): 169-180.
- [57] Chokor BA. Government Policy and Environmental Protection in the Developing World: The Example of Nigeria. *Environmental Management*. 1993; 17(1): 15-30.
- [58] The Global Environment Facility. Washington DC. 2002.
- [59] Fourth National Biodiversity Report. Abuja, Federal Republic of Nigeria. 2010.
- [60] FAO. Global Forest Resources Assessment: Country Report, Nigeria. Food and Agriculture Organization of the United Nations: Forestry Department. 2010a
- [61] Federal Government of Nigeria. Nigeria's Path to Sustainable Development Through Green Economy. Country Report to the Rio + 20 Summit. 2012.
- [62] Ite UE. Community Perceptions of the Cross River National Park, Nigeria. *Environmental Conservation*. 1996; 23(4): 351-357.
- [63] Osemeobo GJ. Is Traditional Ecological Knowledge Relevant in Environmental Conservation in Nigeria. *International Journal of Sustainable Development and World Ecology*. 2001; 8(3): 203-210.
- [64] FAO. Global Forest Resources Assessment: Main Report. Food and Agriculture Organization of the United Nations of the United Nations: Rome. 2010b.
- [65] Wilkie D, Carpenter JF, Zhang Q. The Under-Financing of Protected Areas in the Congo Basin: So Many Parks and So Little Willingness-To-Pay. *Biodiversity Conservation*. 2001; 10: 691-709.
- [66] Hockings M. Evaluating Management of Protected Areas: Integrating Planning and Evaluation. *Environmental Management*. 1998; 22(3): 337-345.
- [67] Hockings M, Hobson R. Fraser Island World Heritage Area Monitoring and Management Effectiveness Project Report. Brisbane (Australia): University of Queensland. 2000.
- [68] Hakizumwami E. Protected Areas Management Effectiveness Assessment for Central Africa. Gland (Switzerland): IUCN/WWF Forest Innovations Project. 2000.
- [69] Kolahi M, Sakai T, Moriya K, Majid FM, Koyama L. Assessment of the Effectiveness of Protected Areas Management in Iran: Case Study in Khojir National Park. *Environmental Management*. 2013; 52 (2): 514-530.
- [70] Leverington F, Costa KL, Courrau J, Pavese H, Nolte C, Marr M, Coad L, Burgess N, Bomhard, B, Hockings M. Management Effectiveness Evaluation in Protected Areas – A Global Study. 2nd Edition 2010. The University of Queensland Brisbane Australia. 2010a.
- [71] Leverington F, Costa KL, Pavese H, Lisle A, Hockings M. A Global Analysis of Protected Area Management Effectiveness. *Environmental Management*. 2010b; 46(5): 685-698.
- [72] Hausner VH, Engen S, Bludd EK, Yoccoz NG. Policy Indicators for Use in Impact Evaluations of Protected Area Networks. *Ecological Indicators*. 2017; 75: 192-202.
- [73] Tallis H, Kareiva P, Marvier M, Chang A. An Ecosystem Services Framework to Support both Practical Conservation and Economic Development. *Proceedings of the National Academy of Sciences*. 2008; 105(28): 9457-9464.
- [74] Berkes F. Rethinking Community-Based Conservation. *Conservation Biology*. 2004; 18(3): 621-630.
- [75] Anthony BP, Shestackova E. Do Global Indicators of Protected Area Management Effectiveness Make Sense? A Case Study from Siberia. *Environmental Management*. 2015; 56(1): 176-192.
- [76] Dudley N. How Effective Are Protected Areas? A Preliminary Analysis of Forest Protected Areas by WWF – The Largest Ever Global Assessment of Protected Area Management Effectiveness. A Report Prepared for the Seventh Conference of Parties of the Convention on Biological Diversity, February. Switzerland: WWF. 2004.
- [77] Convention on Biological Diversity. Protected Areas in Today's World: Their Values and Benefits for the Welfare of the Planet. Montreal, Technical Series no. 36. 2008: i-vii + 96 pages.
- [78] López-Rodríguez F, Rosado D. Management Effectiveness Evaluation in Protected Areas of Southern Ecuador. *Journal of Environmental Management*. 2017; 190: 45-52.
- [79] Mahajan SL, Daw T. Perceptions of Ecosystem Services and Benefits to Human Well-Being from Community-Based Marine Protected Areas in Kenya. *Marine Policy*. 2016; 74: 108-119.
- [80] Geldmann J, Coad L, Barnes M, Craigie ID, Hockings M, Knights K, Leverington F, Cuadros I, Zamora C, Woodley S, Burgess ND. Changes in Protected Area Management Effectiveness Over Time: A Global Analysis. *Biological Conservation*. 2015; 191: 692-699.
- [81] Venter O, Fuller RA, Segan DB, Carwardine J, Brooks T, Butchart SH. Targeting Global Protected Area Expansion for Imperiled Biodiversity. *PLoS Biol*. 2014; 12(6).
- [82] Craigie ID, Baillie JE, Balmford A, Carbone C, Collen B, Green RE, Hutton JM. Large Mammal Population Declines in Africa's Protected Areas. *Biological Conservation*. 2010; 143(9): 2221-2228.
- [83] Scharlemann JPW, Kapos V, Campbell A, Lysenko I, Burgess ND, Hansen MC, Gibbs HK, Dickson B, Miles L. Securing Tropical Forest Carbon: The Contribution of Protected Areas to REDD. *Oryx*. 2010; 44: 352-357.
- [84] Coad L, Campbell A, Miles L, Humphries K. The Costs and Benefits of Protected Areas for Local Livelihoods: A Review of the Current Literature. Working Paper. UNEP World Conservation Monitoring Centre, Cambridge, U.K. 2008.
- [85] Diaz-Christiansen S, López-Guzmán T, Gálvez JCP, Fernández GAM. Wetland Tourism in Natural Protected Areas: Santay Island (Ecuador). *Tourism Management Perspectives*. 2016; 20: 47-54.
- [86] Ezebilo EE, Mattsson L. Socio-Economic Benefits of Protected Areas as Perceived by Local People Around Cross River National Park: Nigeria. *Forest Policy and Economics*. 2010; 12(3): 189-193.
- [87] Philips A. The History of the International System of Protected Area Management Categories. *Parks*. 2004; 14(3): 4-14.

- [88] Marguba LB. Development of National Parks in Nigeria: An Overview. A Paper Presented to the Meeting of the Nigerian Field Society, UK Branch. 9th - 10th October, 1999 at Whispnade, England. 1999.
- [89] Novelli M, Gebhardt K. Community Based Tourism in Namibia: 'Reality Show' or 'Window Dressing'? *Current Issues in Tourism*. 2007; 10(5): 443-479.
- [90] Carranza T, Manica A, Kapos V, Balmford A. Mismatches between Conservation Outcomes and Management Evaluation in Protected Areas: A Case Study in the Brazilian Cerrado. *Biological Conservation*. 2014; 173: 10-16.
- [91] Pfeifer M, Burgess ND, Swetnam RD, Platts PJ, Willcock S, Marchant R. Protected Areas: Mixed Success in Conserving East Africa's Evergreen Forests. *PloS One*. 2012; 7(6): e39337.

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