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# Management of biodiversity in Pakistan protected areas and its legal implications

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## Abstract

Numerous studies over the last decade have shown the positive effects of green infrastructure and protected areas like the (Natura) 2000 network on the economy and the quality of life of local communities. Carbon storage, water supply and purification, flood management, soil retention, recreation and tourism, fish and timber availability, and so on are all examples of benefits. Understanding the importance of biodiversity conservation, garnering funding for upkeep and restoration, and encouraging responsible involvement in protected areas have all benefited from these assessments. Fourteen national parks, one hundred ninety-nine wildlife sanctuaries, ninety-six game reserves, sixteen unclassified areas (private, planned, or indicated), a biosphere reserve, and nine wetlands recognized by the Ramsar Convention may be found in Pakistan. The total area covered by these clusters is 9,170,121 hectares (10.4%). Ecosystem requirements are not being met due to size, dispersion, or management. Various laws need the creation of policy and legal frameworks, the enforcement of laws, the development of capacity, the provision of incentives, and the provision of funds from federal and provincial governments, all with the goal of safeguarding biodiversity (Heydari, Omidipour, & Greenlee, 2020). Federal policies and programmes are necessary for the conservation and sustainable use of biological variety. This article examines the significance of conservation efforts and future evaluations in halting biodiversity loss.

**Keywords:** Conservation, Biodiversity, Loss of Habitat, Legal Framework, Protected Areas

## Introduction

Pakistan spans 803,944 km2 from the Arabian Sea to the highlands of Central Asia. It shares boundaries with Iran, Afghanistan, China, and India to the west, north, east, and southeast, respectively. A thousand km of land borders the Arabian Sea (Bashitialshaaer, Persson, & Aljaradin, (2011). The Palaearctic, the Indo-Malayan, and the Ethiopian biomes are all represented there. Indomalayan species are found in the Indus Basin in eastern Asia, whereas Palaearctic species are abundant in the Arctic and Pacific Oceans, respectively, to the north and west. The Palaearctic area includes Eurasia, the Middle East, West Asia (including Afghanistan and Iran), Central Asia, and Tibet, and it is home to a wide variety of animal and plant species. For the scaly creatures, we'll allot 10% (Pettitt, 2022). Despite only possessing 5% endemism among plants, 0% among birds, 4% among mammals, and 11% for fish), the mixture of components from various sources results in flora and fauna that are both distinctive and diversified (Dar, & Khuroo, 2020). Due to the lack of primary fieldwork in Pakistan, these findings may understate the country's biodiversity. Pakistan is troubled by the deterioration, destruction, and loss of its natural habitats. Loss and degradation are on the horizon for the already reduced and fragmented forest area. There have been a lot of losses or threats to marine and freshwater ecosystems. Many natural plant and animal species in Pakistan are threatened either nationally or internationally. The deterioration of agroecosystems and the resulting loss of genetic diversity are problems that affect Pakistan as well (Ghafar et al., 2020).

### Legal Framework

The law places more emphasis on safeguarding animal species than on protecting endangered flora. Most of the current regulations meant to curb trophy hunting are unenforceable. Although legislation have been passed to conserve a select number of species (including falcons and cranes), further management measures may be needed to save other prominent endangered species.

There are national parks, game reserves, and wildlife sanctuaries in Pakistan. Existing legislation is inadequate for wildlife management. The rules grant wildlife authorities at the provincial level jurisdiction over protected areas, but not adjacent areas. Development near protected areas sometimes interferes with efforts to conserve local biodiversity. For the protected area to be effectively managed, local people need to make use of it and be a part of the process. No kind of protected area allows for community participation. A drafting model wildlife legislation that

permits cooperative wildlife management is now being examined by provincial governments (Hessami et al., 2021).

The PA classifications in Pakistan are out of date. The majority of the world's surviving biodiverse areas are used and maintained by local communities. Establishing cooperative management regimes is the most efficient method of protecting these regions. Pakistan's wildlife legislation does not include provisions for community-based protected areas with the goal of long-term sustainable usage (Khan, Ali, & Margerum, 2022).

Pakistan should evaluate its present laws to identify any gaps or other deficiencies in its attempts to conserve its biodiversity and to clarify the extent of the different law enforcement and separate authorities. There has to be a change in the law at the local level to get more people involved in protecting biodiversity. By modernizing legislation that regulate community ownership and access to biological resources, we can protect and promote indigenous natural resource management practices.

**Strategies and Policies for Management**

The few protected sites in Pakistan that do have management plans are seldom implemented. Conventional wisdom holds that management plans are more like set-in-stone policies than flexible guides. Khunjerab National Park and Margalla Hills National Park, located in the Federal Territory's Northern Areas, have just been formed. Kirthar in Sindh and Hazarganji Chiltan in Balochistan both have their own national parks with established management plans.

The conservation and responsible use of Pakistan's rich biodiversity are inextricably linked to the country's forestry, fisheries, agriculture, and wildlife policies and initiatives (Zia-ud-Din et al., 2023; Ahmad et al., 2015). In order to ensure that federal wildlife policies and programmes are consistent, the National Council for Wildlife Conservation (NCCW) was established in 1974. Provincial wildlife agencies and/or Wildlife Management Boards are in charge of setting and implementing wildlife policy and planning. The wildlife programmes and plans in Pakistan prioritize game species and other animals above plant species. They have to do with restrictions on commerce that apply to protected areas and endangered animals. With provincial input, the GOP has developed a new national wildlife policy. All wild species and their habitats are included by this policy but any non-domesticated animal, plant, or genetic material is not (Soni, 2020).

Prior to the 1992 Cabinet ratification of the NCS, environmental concerns and biodiversity were mostly disregarded in Pakistan's Perspective Plan, Five Year Plan, and Annual Development. The NCS's impact is shown by the 8th Five-Year Plan (1993-1998), which identifies environmental conservation as a "key challenge" (Hanson et al., 2000). The plan's goal is to keep natural resources around for future generations. The strategy focuses on three main areas: institutional reform, legislative reform, and public education. Included are "action" for endangered species, creating and maintaining protected areas, and preserving plants on-site. Protected area management is a weak spot, hence efforts are being undertaken to strengthen it.

The World Wildlife Fund (WWF) and the World Bank (WB) organised workshops in 1999 and 2000, respectively, to highlight the relevance of management and performance indicators in monitoring protected areas. The seminars were held in Bhutan and Bhopal, India. Collaborations of this kind may improve the data utilized for the administration of conservation areas. All of Pakistan's land, river, sea, and coastal regions that are important for biodiversity must be included in the country's network of protected areas.

Strategies and practices that promote the preservation and prudent use of natural resources should also be put into place. Particular care must be taken to protect fragile ecosystems like those found in the water along the coast and in other environmentally sensitive locations. Baluchistan, the NWFP, and Southeast Pakistan all need more parks. Priority areas must be selected all over the globe for the *"Ramsar Convention"*, the *"Man and the Biosphere (MAB) Programme"*, and the Globe Heritage Convention to successfully carry out their missions (Schaaf, Rodrigues, 2016).

**Strengthening Workforce Capabilities to Increase Productivity**

Enhancing Capabilities Provincial wildlife agencies often fall short in personnel and funding. Scientists, researchers, NGOs, policymakers, and planners all need training. The public, the commercial sector, and the government must work together to ensure the longevity of national parks, biosphere reserves, and wildlife sanctuaries (Howe, McMahon, & Propst, 2012). Support of this kind is extremely unlikely to materialize unless society as a whole acknowledges the value of protected areas to its people and takes steps to ensure that they are managed in the most efficient and cost-effective manner. Getting specific is necessary for success in life and in business.

There has to be better dialogue between protected area administrators and other sectors. In order to accomplish this objective, it is essential to provide funds, personnel, and equipment for training

programmes that are already in place. Additionally, the ability of internationally active NGOs and community-based organisations to play an effective role in the conservation of biodiversity must be increased. The organisation has a significant presence in the community (Finger, Princen, 2013).

**Improving Outcomes through Community Involvement**

As the ultimate beneficiaries of biological variety, local communities have a responsibility to protect and make good use of the resources it provides. Communities in Pakistan may be the key to stopping the loss of biodiversity and reaping its benefits. The environmental consequences of businesses' inefficient resource usage are typically borne by local communities, with little in return Balto, 2023). As a result, the government does not account for the full expenses associated with exploiting biodiversity in its budgeting and planning processes. Protected habitats sometimes need nearby activity to survive. Involving locals in management and encouraging suitable development in neighboring areas may improve the protected area's survival for a longer period (Serenari, Peterson, Wallace, & Stowhas, 2020).

The new plan calls for community members to be facilitators, rather than bystanders. A great example of the UNDP's creativity is their "Maintaining GEF's Biodiversity with Rural Community Development" programme. This strategy has initially been implemented in Pakistan. The first findings are encouraging, demonstrating that biological resources may be managed efficiently by local groups. Using this method, we may establish new biosphere reserves (in the Palas Valley and the Indus Delta) and improve the management of others (in the Lal Suhanra Biosphere Reserve), all while strengthening our connections to the local populations who live inside protected regions (Chakraborty, 2021).

**Inequitable division of both costs and benefits**

The imbalanced distribution of the benefits and costs associated with conservation and exploitation in Pakistan is a major contributor to the country's rapidly declining biodiversity. Those that profit from the reduction in biodiversity do not shoulder the costs associated with it; rather, the responsibility falls on other demographic subsets within our society. Because the state retains control over these resources and the centralized processes that are the direct outcome of this control, local communities are unable to guarantee the natural resources they rely on for their

continued viability in the long run, consequently, the biodiversity in Pakistan exceptionally is at danger.

Several national governments are stepping up their efforts to encourage responsible resource use and conservation by implementing a range of financial and non-financial rewards and penalties. This strategy hasn't been used by Pakistan very often at all. There are not a lot of incentives to promote conservation vacations or the sustainable use of biodiversity. This is because the advantages that biodiversity provides are not properly recognized or addressed. In a manner similar to that of suitable incentives, incentives are characterized by insufficient enforcement. In addition, there is a great deal of "perverse" incentives, notably in the agricultural sector. For instance, subsidies for irrigation persuades water waste and are detrimental to the habitats of both freshwater and coastal areas (Qadir et al., 2010).

At both the national and the local level, it is essential to make use of incentives as well as disincentives to support biodiversity protection and the responsible use of resources. A few examples of these regulations are tax breaks for the preservation of habitat or species, tax exemptions for charitable contributions to organizations that focus on conservation, and tax deductions for the purchase of conservation-related equipment. It is possible that it would be a good idea to give priority to programmes that provide general education, technical help in agriculture, forestry, and other disciplines, and social incentives to enhance the quality of life in communities that are located near protected areas (Hoffmann, 2022). Two examples of this would be the establishment of new institutions for the management of biodiversity and the resolution of land ownership disputes.

**Raising Public Knowledge and Understanding**

In Pakistan, protected areas are seldom patrolled by locals, which has led to a lack of awareness. The establishment of suitable reward and disincentive programmes, as well as the promotion of public education and awareness about protected areas, have all received insufficient attention. Disobedience by local communities, leading to degradation, or enforcement of laws that go against the interests of local communities, leading to conflict, are both common occurrences in protected areas. The loss of grazing rights in Khunjerab National Park has sparked tensions between locals and park authorities (Khan, Shah, & Khan, 2023).

A strategy for environmental education and awareness is included in Pakistan's National Conservation Strategy; more information on this topic may be found in regional conservation plans (such as the SPCS, BCS, and NACS). The need for biodiversity, however, is an aspect of the larger process of "greening" public education and awareness that simply cannot be disregarded (Gericke, 2022).

**Programmes of Research and Instructional Activities**

Institutions dedicated to study and education are documenting Pakistan's rich biodiversity and keeping an eye on the country's ecological health. Institutions of higher education are tasked with the duty of fostering the development of skilled professionals in the sectors of environmental protection and responsible resource management. There is still a great deal that can be learned about how to sustainably preserve biodiversity. Conservation biology is an interdisciplinary subject that studies and monitors the interactions that occur between humans and the biological resources that are available (Brittain et al., 2020).

Because a solid foundation in the natural, social, and humanities is necessary for the preservation of natural resources and the prudent use of those resources, protected areas and biosphere reserves need a larger amount of scientific inquiry, monitoring, training, and education. This is of the utmost importance in nations whose ecosystem reserves do not have sufficient amounts of either financial or human resources (Ederer et al., 2023).

**Funding Sources**

In an underdeveloped country like Pakistan, funds for conservation simply do not exist. The public has to be made aware of the alarming reduction of biodiversity and the need to protect it in order to raise more money and awareness (Nguyen, Jones, 2022). Investments in biodiversity conservation and management are not wasted; rather, they contribute to a nation's long-term political, social, and economic health. Investments that improve the situation for people of all income brackets and all regions. In national income accounting, these advantages are neither recognized nor appreciated. There has to be more money put into multilateral and bilateral biodiversity programmes (Hein, Miller, & De Groot, 2013).

**Pakistan's National Parks as Examples of Mountain Protected Areas**

In the last two decades, Pakistan has established three separate national parks namely, Chitral Gol, a 7,750-hectare watershed, is protected by Chitral National Park in the Chitral District of the

NWFP. From Dish to the Pakistan-China border at Khunjerab Pass, Khunjerab National Park covers a total area of 2,269 square kilometres in the Gilgit District of the Northern Areas. Skardu is the main part of Central Karakoram National Park, which also includes Gilgit. Glaciers and the rivers that feed them may be found in the uncharted part of the park, including the Baltoro, Panmah, Biafo, and Hispar glaciers. Each park has a usage-control hole despite its unique past. This disparity is what creates problems at each park. By decoupling resource ownership and management, the parties may exert less control over the resources such conflicts have impeded efficient management (Bess, Dee, 2014).

As once-protected alpine meadows, valleys, and animal habitats have become more accessible to resorts, adventure tourists, big game hunters, mountaineers, conservation organizations, and the military, their worth has skyrocketed. The goal of every business is to maximize the use of its available space. The people's customary use also contributes. Each user community has its own approach to administration, and everyone is out for regional supremacy. The needs of all stakeholder groups should be taken into account when cooperative management techniques are developed. The parks in Pakistan have a strong environmentalist culture. Managers of protected areas in developing countries see the value of linking biodiversity protection with larger social and economic objectives. Pakistan has just recently begun using this kind of administration. The national parks of Pakistan have a tight prescriptive structure that makes it impossible for locals to design and carry out. Many activities are forbidden under national park legislation. The IUCN's definition from 1978 is similar to Pakistan's national one from 1975 park regulation.

Pakistan continues to use the same criteria, although the IUCN's definition has to be updated to suit modern park management practices. Conflict is encouraged by park design in Pakistan, as shown by the court proceedings in Chitral Gol and Khunjerab. The last time Mehtar Saiful Mulk Nasir, formerly of Chitral, appeared in court was 20 years ago. The government does not recognize the assertion of the former Mehtar that Chitral Gol is his private property. Residents of Chitral Gol are filing a lawsuit (Ali, 2008). In June of 1995, the lawsuit had not been resolved. Khunjerab's government banned the practice of customary grazing without providing any kind of compensation to the affected people. In October of 1990, a court order was issued allowing the people to keep grazing. In 1991, the Khunjerab Security Force (KSF) successfully evicted them. These conflicts and responses emphasize the divide between protected areas and the decision-makers in Islamabad, as well as between access and oversight.

Changes in Khunjerab culture may provide cause for optimism. The federal government employs a management strategy based on co-management. In a co-managed setting, all stakeholders have an equal voice in setting the strategy and carrying it out. The government must provide equal management power and responsibility to local communities and user groups. Under this scheme, utilisation and regulation may coexist. Authorities should safeguard local communities, hopes, knowledge, skills, and resources for implementation while also empowering all user groups, especially local communities, to make decisions (Ye, Yang, 2020).

They need not give up any of their power as a result of this. Users must also take responsibility. They can't merely utilize the space; instead, they have to take responsibility for what they do, make administrative contributions, and work together with other people. To avoid Chitral Gol and Khunjerab, the Central Karakoram National Park was established in 1993. IUCN, an advocate, has said that the local community is the "heart" of the park.

Having the government manage mountain parks is not likely to solve the problems that visitors face. The transition to private management is unlikely to result in improved conflict resolution or the provision of essential resources and management expertise. Traditional common property regimes based on villages encounter challenges from different user groups. It shows that the best method to manage these areas presently is via a co-managed strategy that mixes development and conservation (Borrini, Kothari & Oviedo 2004). The extinction of species and the collapse of ecosystems have devastating consequences for Pakistan and the rest of the world. If Pakistan loses its unique species and environment, so will the rest of the globe.

**Conclusion and Suggestions**

The long-term success of every nation depends on its commitment to biodiversity conservation. Pakistan has steadily improved its environmental protection measures. There have been significant efforts made to preserve and enhance environmental biodiversity to the point where it meets international standards. The country has also ratified relevant international conventions, however, there are still an excessive number of discrepancies because of insufficient management efforts. In order to properly maintain Pakistan's protected regions, major steps must be taken.

The following recommendations are made after a thorough examination of the current state of Pakistan's protected areas:

Enforcement of current regulations in a more effective manner is the single most significant factor in the development of protected areas in accordance with international standards. Since Pakistan's

independence, environmental protection regulations have been drafted, however, they are seldom or only partially enforced. Law enforcement authorities must ensure the strict observance of all laws and regulations. Execution of rules restricting resource use, hunting, land usage, or any other activity in protected areas is essential to achieving the conservation aim. Consequently, it is highly suggested that regulations be enforced by heavy penalty for the unauthorized usage of natural resources.

Protected areas cannot ensure environmental biodiversity is preserved unless a comprehensive management plan and strict oversight are in place. An efficient management plan is essential for the effective enforcement of laws and policies in any protected area. Many of Pakistan's protected areas lack an effective management plan or, if one does exist, it is not being implemented. Therefore, it is recommended that strategies for the effective management of protected areas be developed and put into action without delay. This is a more effective method of protecting regions with rare biodiversity.

An additional critical aspect of this problem is community participation in the creation of protected spaces. In Pakistan, protected zones are often established without giving enough thought to the needs of the local community. The people who live on the outside of parks and reserves are essential to any successful conservation efforts. If locals rely too much on their environment for financial support, they need access to other opportunities. To achieve this goal, the local community must benefit from area-specific development projects. The success of a protected area may be boosted further by inviting locals to take part in management efforts. Therefore, effective policies relating to community engagement may lead to more favorable outcomes.

Protected area management may be made more dynamic via the use of tools like raising public awareness and educating people about the need of biodiversity protection. Protected areas, environmental protection, biodiversity, and endangered ecosystems may all benefit from increased public knowledge and consciousness brought about by the press and other informational media. Articles and booklets on the subject need to be printed in both national and local languages for this purpose. In order to properly manage protected areas, it is essential that communication hubs dedicated to conservation concerns be made available to the public. It is crucial that people living in close proximity to protected areas understand the significance of the area's protected status. It is highly suggested that visitors to protected areas be given all the information they need to ensure the region is kept in pristine condition.

There are just three types of protected areas in Pakistan, and this is not nearly enough to meet current demands. Creating new types of protected areas that meet IUCN standards is highly suggested. The absence of a marine protected areas system in Pakistan is a serious issue that has to be addressed immediately. It is imperative that new national parks, game reserves, and wildlife sanctuaries be created in regions where natural resources and biodiversity are being depleted owing to a lack of effective management and administration.

Protected area management is complicated by the need for adequate funding. Management operations, rules, and policies cannot be executed without sufficient financing. Therefore, it is advised that sufficient money be made available for the betterment of these regions. The federal government, provincial governments, and Non-Governmental Organizations (NGOs) all have a part to play in finding a solution to the financial problem.

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