Strengthening National Park Governance and Biodiversity Conservation in Ethiopia: Institutional Challenges, Socio-Economic Dynamics, and Strategic Reform Pathways.

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Abstract: Ethiopia is one of Africa's most biologically diverse countries, hosting exceptional levels of species richness and endemic due to its wide altitude range, varied climates, and complex ecosystems. National parks play a central role in conserving this biodiversity while contributing to ecosystem services, climate resilience, and national development. This report examines the current status of biodiversity conservation in Ethiopia with a particular focus on the national park system. It reviews the country's biodiversity profile, protected area network, conservation policies, and management practices, and evaluates conservation outcomes and achievements. The analysis identifies major challenges, including habitat loss, governance and institutional weaknesses, socioeconomic conflicts, and policy and knowledge gaps that constrain effective conservation. The report further outlines future directions and policy recommendations aimed at strengthening national park governance, enhancing community participation, improving financing and management capacity, and integrating conservation with development goals. Strengthening national parks is essential for safeguarding Ethiopia's biodiversity and supporting sustainable development in the face of growing environmental pressures.

Keywords: *Biodiversity conservation; National parks; Protected areas; Ethiopia; Endemic species; Wildlife governance; Ecosystem services; Community-based conservation; Sustainable development; Climate resilience.*

1.Introduction

Biodiversity forms the foundation of ecological stability, economic resilience, and human well-being by supporting ecosystem productivity, regulating environmental processes, and providing essential goods and services to human societies (MEA, 2005; TEEB, 2010). In many developing countries, biodiversity is directly linked to livelihoods, food security, cultural identity, and national development. As a result, the conservation of biological resources has become a central policy concern at both national and global levels, particularly in the face of rapid population growth, land-use change, and climate change (UNEP, 2016; IPBES, 2019).

Ethiopia is widely recognized as one of Africa's most biologically diverse countries due to its exceptional topographical variation, wide altitude range from approximately 125 meters below sea level to over 4,600 meters above sea level and diverse climatic zones (EPA, 2012; Vivero et al., 2005). These conditions have given rise to a wide range of ecosystems, including arid and semi-arid lowlands, savanna, montane forests, wetlands, and afro-alpine ecosystems of global conservation significance (Friis et al., 2010).

Consequently, Ethiopia is identified as one of the world's biodiversity hotspot countries and a priority area for global conservation efforts (Mittermeier et al., 2011).

The country hosts more than 6,000 species of higher plants, with approximately 10–12 percent being endemic (Friis et al., 2010). Ethiopia also exhibits high levels of fauna endemic, including at least 31 endemic mammal species and more than 20 endemic bird species (Yalden & Largen, 1992; EWCA, 2016). Flagship species such as the Ethiopian wolf (*Canis simensis*), Walia ibex (*Capra walie*), Gelada (*Theropithecus gelada*), and Mountain nyala (*Tragelaphus buxtoni*) highlight the country's global conservation importance (Sillero-Zubiri & Macdonald, 1997). Beyond their intrinsic ecological value, these biological resources provide critical ecosystem services, including water regulation, soil conservation, pollination, climate regulation, and genetic resources vital for agriculture and food security (MEA, 2005; TEEB, 2010).

Despite this richness, Ethiopia's biodiversity is under increasing pressure from human-induced and environmental factors. Agricultural expansion, deforestation, settlement, overgrazing, infrastructure development, and climate change have led to widespread habitat loss and ecosystem degradation (WBISPP, 2004; UNEP, 2016). Population growth and rural poverty further intensify pressure on natural resources, resulting in declining wildlife populations and increasing human–wildlife conflict.

National parks have historically played a central role in Ethiopia's biodiversity conservation strategy. The establishment of protected areas began in the 1960s, influenced by global conservation models that prioritized wildlife protection and scenic preservation (Young, 2012). Early national parks such as Awash, Simien Mountains, and Bale Mountains were gazetted primarily to conserve flagship species and promote tourism (Hurni & Ludi, 2000). Over time, however, the objectives of national parks have expanded to include ecosystem conservation, scientific research, cultural heritage protection, and socio-economic development (EWCA, 2016).

The legal and institutional framework governing national parks has evolved through successive political regimes. Currently, protected areas are guided by national policies and proclamations, with the Ethiopian Wildlife Conservation Authority (EWCA) serving as the lead federal institution responsible for wildlife and national park management (FDRE, 2007). However, many national parks were established with limited participation of local communities, often restricting access to land and natural resources traditionally used for grazing and settlement (Pankhurst, 1995; Young, 2012). These historical exclusions have contributed to long-standing conflicts between conservation authorities and local communities, posing challenges for effective park management.

Ethiopia's protected area system includes several categories, such as national parks, wildlife reserves, wildlife sanctuaries, controlled hunting areas, forest priority areas, and biosphere reserves designated under UNESCO's Man and the Biosphere Programme (EWCA, 2016; UNESCO, 2019). National parks represent the most strictly protected category, focusing on ecosystem and species conservation while permitting regulated tourism and research. Biosphere reserves, in contrast, promote integrated conservation and development through zoning approaches that balance biodiversity protection with sustainable resource use and community livelihoods (UNESCO, 2019).

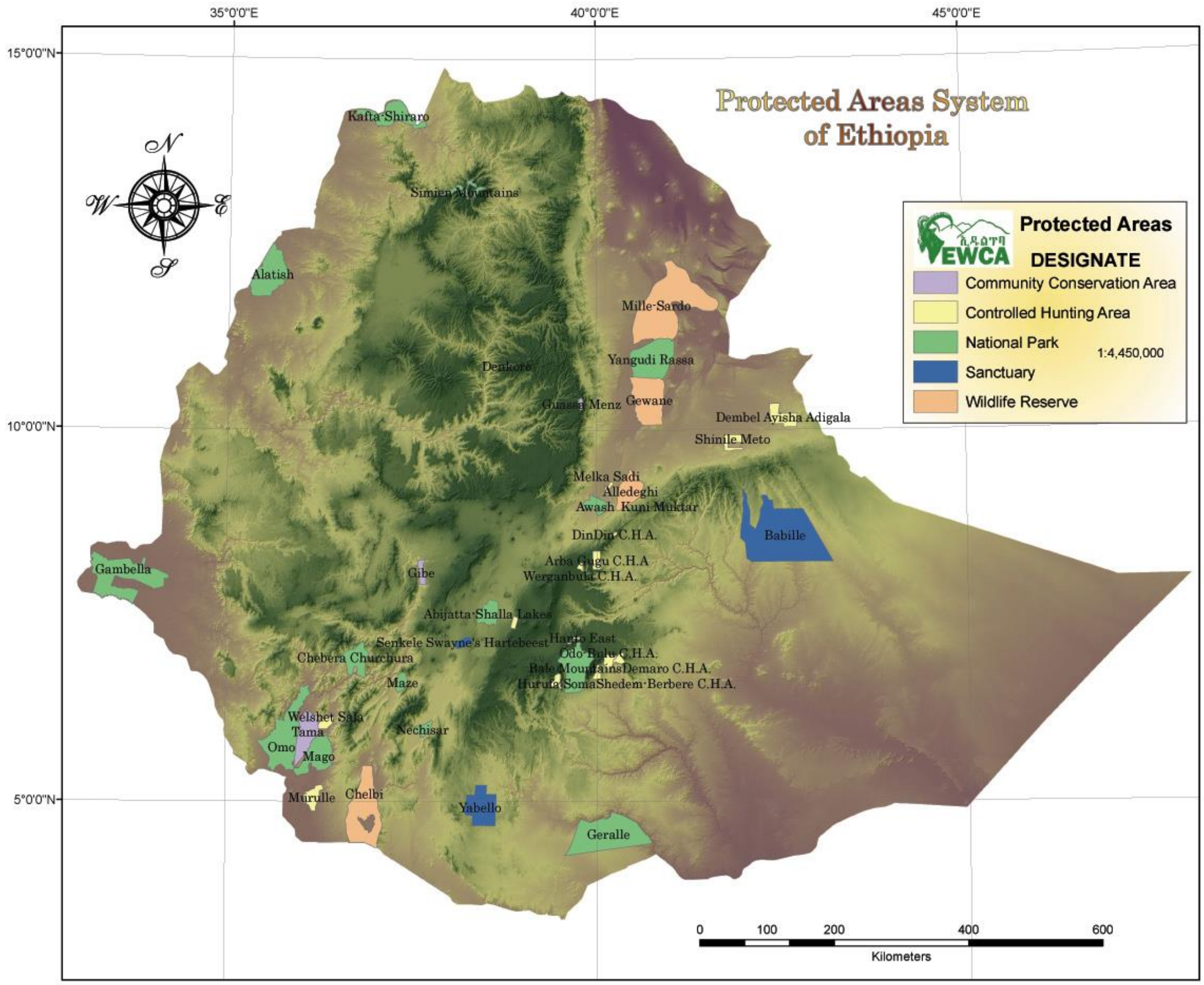
The relationship between national parks, biodiversity conservation, and national development has gained increasing attention in Ethiopia's policy discourse. Protected areas contribute to economic growth through nature-based tourism, employment creation, and foreign exchange earnings (Ashley et al., 2006; UNWTO, 2018). They also provide ecosystem services that support agriculture, hydropower generation, climate resilience, and disaster risk reduction (MEA, 2005; UNEP, 2016). However, conservation objectives often conflict with development pressures such as agricultural expansion, settlement, and large-scale investment projects, which frequently encroach on protected areas and buffer zones (Young, 2012).

Against this background, this report examines the role of national parks in biodiversity conservation in Ethiopia, with particular emphasis on governance, management effectiveness, and socio-economic linkages. It assesses selected national parks to understand how current protected area approaches respond to ecological threats, institutional challenges, and community needs. The report is structured as follows: the next section reviews Ethiopia's biodiversity and major ecosystems, followed by an examination of the protected area system and governance framework. Subsequent sections analyze key challenges affecting biodiversity conservation and conclude with policy options and recommendations for strengthening national parks as pillars of sustainable development in Ethiopia.

2. Current Situation

2.1 Biodiversity Profile of Ethiopia

Ethiopia is one of Africa's most biodiverse countries, characterized by exceptional ecological heterogeneity arising from wide altitudinal variation, diverse climatic regimes, and complex topography (Friis, Demissew & van Breugel, 2010; Scholte et al., 2025). The country spans elevations from below sea level in the Danakil Depression to over 4,600 m in the Simien Mountains, creating a mosaic of ecosystems ranging from arid lowlands to Afro-alpine habitats. Ethiopia lies at the intersection of several biogeographic zones and encompasses parts of two globally recognized biodiversity hotspots: the Eastern Afromontane and the Horn of Africa, both noted for high species richness and endemism (Mittermeier et al., 2011). The map shows that Ethiopia's national parks are widely distributed across the country, covering highland, lowland, Rift Valley, and riverine ecosystems. This broad spatial spread reflects Ethiopia's ecological diversity, with parks protecting Afro-alpine habitats in the highlands, savannas and wetlands in the lowlands, and lakes and floodplains in the Rift Valley, highlighting the national park system's role in conserving a wide range of ecosystems and species.



Map 1. The Protected Areas of Ethiopia. Note the many PAs in the Rift Valley which bisects the country from northeast to southwest, separating two large highland areas, one represented by Simien Mountains National Park and the other by Bale Mountains National Park.

This ecological diversity is reflected in Ethiopia's rich flora and fauna. Current estimates indicate the presence of more than 325 mammal species, including at least 64 endemic mammals, such as the Walia ibex (Capra walie), mountain nyala (Tragelaphus buxtoni), and the Ethiopian wolf (Canis simensis), which is among the world's rarest canids (Sillero-Zubiri & Macdonald, 1997; EWCA, 2016). Ethiopia also supports over 880 bird species, with approximately 18 endemic species, making the country a global priority for avian conservation (Yalden & Largen, 1992). Reptiles, amphibians, and freshwater fish exhibit similarly high levels of endemism, while the flora includes more than 6,000 higher plant species, hundreds of which are endemic (Friis et al., 2010).

Major ecosystems include Afro-montane forests, Afro-alpine grasslands, savannah woodlands, wetlands, and the Rift Valley lake system (Figure 1). These ecosystems provide critical services such as watershed protection, soil fertility maintenance, carbon

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sequestration, and hydrological regulation, supporting both national development and downstream populations in transboundary basins such as the Nile (MEA, 2005; CBD, 2021). However, many ecosystems have become increasingly fragmented due to human pressures, leading to habitat degradation and loss of ecological integrity across large parts of the country (UNEP, 2016).

Despite Ethiopia's biological wealth, biodiversity faces significant threats. Agricultural expansion, deforestation, overgrazing, invasive species, infrastructure development, and climate change are major drivers of biodiversity loss (CBD, 2021; IPBES, 2019). In many protected areas, these pressures have resulted in declining wildlife populations and reduced ecosystem functionality, raising concerns about long-term conservation effectiveness.

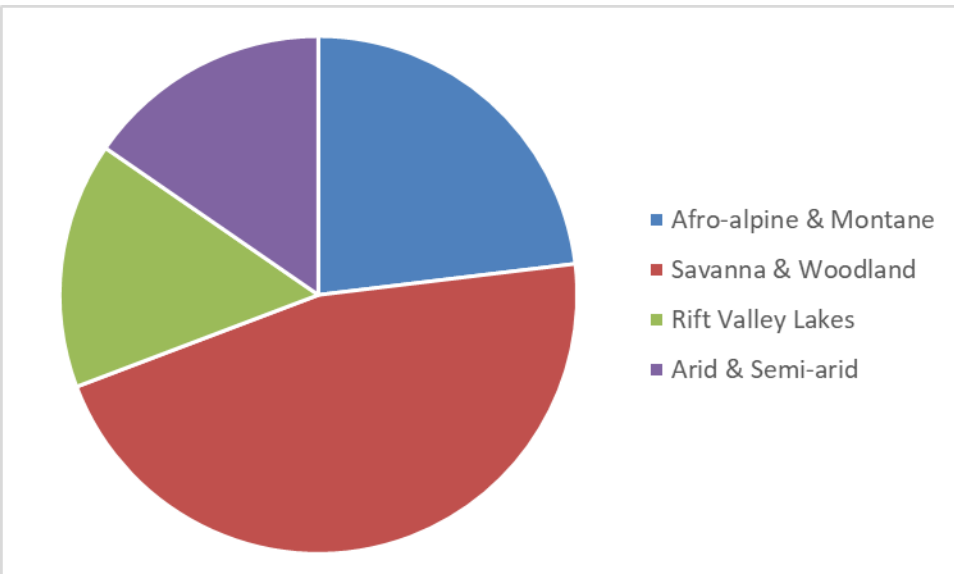

Figure 1: Categories of National parks ecosystem in Ethiopia

Table 1 highlights Ethiopia as one of Africa's most biologically diverse countries, with exceptionally high levels of endemism, particularly among higher plants and mammals. The country supports an estimated 5,000–7,000 plant species, of which up to 700 are endemic, reflecting strong links between biodiversity, topographic complexity, and climatic variability. Mammals and birds include several globally threatened and endemic species, emphasizing Ethiopia's global conservation importance. Amphibians show a high proportion of endemic species, making them valuable indicators of ecosystem health, while freshwater fish diversity is closely associated with Rift Valley lakes and major river systems.

Table 1: Biodiversity Profile of Ethiopia

Taxonomic Group	Estimated Number of Species	Estimated Endemic Species	Conservation Significance
Higher plants	5,000–7,000	600–700	High plant endemism linked to topographic and climatic diversity
Mammals	270–325	30–60	Includes globally threatened endemics (Ethiopian wolf, Walia ibex)
Birds	860–880	18–20	Important migratory routes and endemic highland species
Reptiles	200–250	Limited data	Concentrated in arid and semi-arid ecosystems

Amphibians	60–80	High proportion endemic	Sensitive indicators of ecosystem health
Freshwater fish	150–190	Moderate	Rift Valley lakes and major river systems

Source: Ethiopian Biodiversity Institute (2015); FAO (2018); CBD Secretariat (2014)

2.2 National Park System

Ethiopia's protected area network comprises a variety of conservation designations, including national parks, wildlife reserves, wildlife sanctuaries, controlled hunting areas, biosphere reserves, and forest priority areas. National parks, broadly aligned with IUCN Category II, are intended to conserve representative ecosystems and wildlife while permitting regulated tourism, research, and education (EWCA, 2016).

Key national parks include Simien Mountains National Park, Bale Mountains National Park, Gambella National Park, Awash National Park, Nechisar National Park, Omo National Park, Mago National Park, Maze National Park, Yangudi Rassa National Park, and Kafta Sheraro National Park. Collectively, these parks represent Ethiopia's major ecological gradients, from Afro-alpine and montane ecosystems to savannahs, floodplains, and riverine forests (EWCA, 2016).

Simien Mountains National Park, one of Ethiopia's oldest protected areas, is internationally recognized as a UNESCO World Heritage Site due to its dramatic landscapes and endemic wildlife, including the Walia ibex and Ethiopian wolf (UNESCO, 2023). Bale Mountains National Park is globally significant for hosting the largest Afro-alpine ecosystem in Africa and for its role as a critical water catchment supporting millions of downstream users (Sillero-Zubiri et al., 2011). Gambella National Park protects extensive wetlands and floodplains that support one of Africa's last large-scale mammal migrations (Scholte et al., 2025).

In addition to national parks, Ethiopia has established UNESCO Biosphere Reserves, such as the Lake Tana Biosphere Reserve, which aim to integrate biodiversity conservation with sustainable development and community livelihoods through zoned management approaches (UNESCO, 2019). Altogether, protected and conserved areas cover approximately 12–15% of Ethiopia's land area, approaching international targets for area-based conservation, although effectiveness remains uneven across sites (CBD, 2021; Scholte et al., 2025).

Table 2 demonstrates that Ethiopia's national parks encompass a wide range of ecosystems, from Afro-alpine and montane forests to savannas, grasslands, and Rift Valley Lake systems. Parks such as Bale Mountains and Simien Mountains are critical for the survival of endemic and endangered species, while large lowland parks (e.g., Omo, Mago, Yangudi Rassa) play an important role in conserving wide-ranging mammals and migratory species. The variation in park size and ecosystem type highlights both ecological richness and management complexity within the national park system.

Table 2: National Parks of Ethiopia and Key Ecological Characteristics

National Park	Approx. Area (km²)	Dominant Ecosystem	Key Biodiversity Values
Bale Mountains NP	~2,200	Afro-alpine, montane forest	Ethiopian wolf, mountain nyala, endemic flora
Simien Mountains NP	~412	Afro-alpine escarpment	Walia ibex, gelada, endemic birds
Awash NP	~756	Savanna, acacia woodland	Oryx, gazelles, high bird diversity
Abijatta–Shalla NP	~887	Rift Valley lakes	Flamingos, pelicans, aquatic biodiversity

Nechisar NP	~514	Grassland and lakes	Plains zebra, crocodiles
Omo NP	~4,068	Savanna and riverine	Elephants, buffalo, migratory wildlife
Mago NP	~2,162	Woodland savanna	Large mammals, cultural landscapes
Yangudi Rassa NP	~5,000	Arid grassland	Lowland fauna, migratory species

Source: *Ethiopian Biodiversity Institute (2016); FAO (2019); Government of Ethiopia Conservation Reports (2017)*

2.3 Conservation Policies and Legal Frameworks

Biodiversity conservation in Ethiopia is guided by a combination of national legislation, policy frameworks, and international commitments. The Ethiopian Wildlife Conservation Authority (EWCA) is the primary federal institution responsible for managing national parks, wildlife reserves, and sanctuaries, with mandates that include conservation planning, law enforcement, wildlife utilization regulation, and ecotourism development (FDRE, 2007; EWCA, 2016).

Ethiopia is a signatory to major international environmental agreements, including the Convention on Biological Diversity (CBD), which has shaped national biodiversity strategies and action plans (NBSAPs) and guided the expansion of protected areas in line with global targets (CBD, 2021). National proclamations provide the legal basis for protected area establishment, management planning, and regulation of wildlife use.

Despite this policy framework, studies highlight persistent implementation challenges, including limited enforcement capacity, overlapping institutional mandates, and coordination gaps between federal and regional authorities (Young, 2012; Tesfaye, 2023). These issues are particularly evident in buffer zones, where competing land uses and unclear tenure arrangements undermine conservation objectives.

Table 3 outlines a relatively comprehensive legal and policy framework supporting national park establishment and management in Ethiopia. The FDRE Constitution provides a strong legal foundation by assigning environmental protection as a state responsibility. Sectoral laws on wildlife, forests, and environmental impact assessment offer regulatory mechanisms for park protection, while the National Biodiversity Strategy and Action Plan align national conservation efforts with international commitments such as the Convention on Biological Diversity. However, the effectiveness of these instruments largely depends on enforcement and institutional capacity.

Table 3: Conservation Policies and Legal Frameworks Relevant to National Parks

Policy / Legal Instrument	Year	Key Provisions	Relevance to National Parks
FDRE Constitution	1995	Environmental protection as a state obligation	Legal foundation for park establishment
Wildlife Conservation Proclamations	Various	Protection of wildlife and habitats	Regulates national parks and wildlife use
Forest Development & Conservation Law	2007	Sustainable forest management	Supports forested parks
NBSAP (CBD)	Updated periodically	Biodiversity conservation strategies	Guides protected area expansion and management
Environmental Impact Assessment Proclamation	2002	Mandatory EIAs	Controls development near parks

Source: *Government of Ethiopia (1995, 2002, 2007); CBD Secretariat (2011)*

2.4 Management Practices in National Parks

Management practices across Ethiopia's national parks vary widely depending on ecological context, funding availability, institutional capacity, and stakeholder engagement. Most parks are managed by EWCA or regional wildlife authorities, with responsibilities encompassing anti-poaching patrols, biodiversity monitoring, tourism management, and community relations (EWCA, 2016).

Recent years have seen the emergence of collaborative and co-management models. A notable example is the long-term partnership between the Government of Ethiopia and African Parks for the co-management of Gambella National Park, aimed at improving conservation outcomes while enhancing community participation and local economic benefits (ENA, 2023).

Participatory approaches are also promoted in biosphere reserves, where local communities are engaged in resource management and benefit-sharing arrangements (UNESCO, 2019). Nevertheless, most national parks continue to face severe constraints, including inadequate budgets, staffing shortages, limited infrastructure, and weak ecological monitoring systems (UNEP, 2016; Scholte et al., 2025).

Human pressures further complicate park management. In parks such as Awash and Nechisar, overgrazing, agricultural encroachment, deforestation, and charcoal production have degraded habitats and reduced wildlife populations, despite formal protected status (Alemayehu et al., 2024).

2.5 Outcomes and Achievements

Despite substantial challenges, Ethiopia's national park system has achieved notable conservation successes. In Simien Mountains National Park, improved management and regulatory measures have contributed to the recovery of key species and the park's removal from UNESCO's List of World Heritage in Danger (UNESCO, 2023).

In Bale Mountains National Park, sustained ecological monitoring and habitat protection have helped maintain globally important populations of Ethiopian wolves and mountain nyala, while safeguarding water catchments essential for climate resilience and downstream livelihoods (Sillero-Zubiri et al., 2011).

Collaborative management initiatives, particularly in Gambella National Park, demonstrate the potential of partnership-based governance models to improve both biodiversity conservation and socio-economic outcomes (ENA, 2023). However, conservation outcomes remain uneven nationally. Many parks continue to experience habitat degradation, wildlife declines, and weak connectivity, indicating that protected area designation alone is insufficient without effective management, adequate financing, and inclusive governance (UNEP, 2016; Scholte et al., 2025).

3. Problems, Challenges and Gaps

Despite Ethiopia's exceptional biodiversity and the expansion of its national park system, conservation outcomes remain constrained by a complex set of ecological, institutional, socio-economic, and policy-related challenges. National parks continue to face mounting pressures that undermine their ability to protect ecosystems and species effectively. This section critically analyzes the major problems, challenges, and gaps affecting biodiversity conservation and national park management in Ethiopia.

3.1 Biodiversity Threats

The most urgent threats to biodiversity in Ethiopia stem from habitat loss and degradation, driven primarily by agricultural expansion, deforestation, overgrazing, and settlement. Rapid population growth and increasing demand for arable land have resulted in the conversion of natural habitats into farmland, often extending into protected areas and their buffer zones (UNEP, 2016; CBD, 2021). This process fragments ecosystems, disrupts ecological connectivity, and reduces the viability of wildlife populations, particularly for species with large home ranges or migratory requirements.

Overgrazing by livestock is a pervasive threat in many national parks, especially in highland and semi-arid regions such as Simien Mountains, Bale Mountains, and Awash National Parks. Livestock competition alters vegetation structure, depletes forage availability for wild herbivores, and accelerates soil erosion (Young, 2012). In Afro-alpine ecosystems, grazing pressure poses a serious risk to endemic plant communities and keystone species such as the Ethiopian wolf, which depends on intact grassland systems (Sillero-Zubiri & Macdonald, 1997).

Deforestation remains a critical driver of biodiversity loss, particularly in southwestern and montane forest ecosystems. Forest clearance for agriculture, fuelwood collection, and charcoal production has significantly reduced habitat extent and quality, threatening forest-dependent species and ecosystem services such as watershed regulation and carbon sequestration (WBISPP, 2004; Friis et al., 2010). Invasive alien species further exacerbate habitat degradation, especially in disturbed landscapes within and around protected areas.

Climate change increasingly compounds these pressures. Rising temperatures, altered rainfall patterns, and increased frequency of extreme events are shifting species distributions, degrading habitats, and intensifying resource scarcity (IPBES, 2019). High-altitude and wetland ecosystems are particularly vulnerable, as species adapted to narrow climatic ranges have limited options for migration or adaptation. Climate change also amplifies human–wildlife conflict, as wildlife encroaches into human-dominated landscapes in search of food and water.

3.2 Governance and Institutional Weaknesses

Governance and institutional challenges represent some of the most persistent barriers to effective national park management in Ethiopia. Although the country has established legal frameworks and institutions for biodiversity conservation, implementation capacity remains weak (EWCA, 2016). Many national parks suffer from chronic underfunding, inadequate staffing, limited equipment, and insufficient infrastructure, constraining routine patrols, monitoring, and enforcement activities.

Institutional fragmentation further undermines conservation effectiveness. Responsibility for land, wildlife, forests, and development is often divided among multiple federal and regional institutions, leading to overlapping mandates, coordination gaps, and inconsistent policy enforcement (Young, 2012). Decentralization has, in some cases, weakened federal oversight of national parks, while regional authorities may prioritize short-term development goals over long-term conservation objectives.

Law enforcement within national parks is frequently insufficient to deter illegal activities such as poaching, illegal grazing, logging, and settlement. Rangers often operate under difficult conditions, with limited training and logistical support, while penalties for violations may be weak or inconsistently applied (UNEP, 2016). As a result, protected status does not always translate into effective protection on the ground.

Management planning and monitoring also remain limited. Many national parks lack up-to-date management plans, baseline ecological data, and systematic biodiversity monitoring programs. This restricts the ability of managers to adopt adaptive management approaches or to evaluate the effectiveness of conservation interventions over time (Scholte et al., 2025). Where management effectiveness assessments exist, they often reveal uneven performance across parks, closely linked to governance quality and resource availability.

3.3 Socio-economic Conflicts

Socio-economic conflicts between conservation objectives and local livelihoods constitute a major challenge for national parks in Ethiopia. Historically, many parks were established with limited consultation of local communities, resulting in restrictions on access to land and natural resources traditionally used for grazing, farming, hunting, and cultural practices (Pankhurst, 1995). These historical grievances continue to shape negative perceptions of protected areas among local populations.

Communities living in and around national parks are often among the most economically vulnerable groups, heavily dependent on natural resources for subsistence. Restrictions imposed by protected area regulations can exacerbate poverty, food insecurity, and social marginalization if alternative livelihood options and benefit-sharing mechanisms are not provided (Poffenberger, 2006). As a result, conservation is sometimes perceived as competing with, rather than supporting, local development.

Human–wildlife conflict is a particularly acute issue. Crop raiding by wildlife, livestock predation by carnivores, and competition for water and grazing frequently generate tensions between park authorities and communities (Messmer, 2000). In areas such as Bale Mountains and Gambella, these conflicts undermine local support for conservation and can provoke retaliatory killing of wildlife.

Although participatory and community-based conservation approaches are increasingly promoted, their implementation remains uneven. Benefit-sharing mechanisms from tourism or conservation-related employment are often limited, poorly distributed, or insufficient to offset the costs borne by local communities (Ashley et al., 2006). Women, pastoralists, and land-poor households are often disproportionately affected, as they have fewer alternative livelihood opportunities and limited voice in decision-making processes.

3.4 Policy and Knowledge Gaps

Several policy and knowledge gaps further undermine biodiversity conservation and national park effectiveness in Ethiopia. While national policies recognize the importance of biodiversity and protected areas, integration across sectors remains weak. Agricultural, infrastructure, energy, and investment policies often conflict with conservation objectives, leading to land-use decisions that encroach on protected areas or their ecological corridors (CBD, 2021).

There is also a gap between policy commitments and financial investment. Conservation financing remains insufficient relative to management needs, and reliance on external donor funding raises concerns about long-term sustainability (UNEP, 2016). Mechanisms such as payment for ecosystem services, conservation trust funds, and tourism revenue reinvestment are underdeveloped or inconsistently applied.

Knowledge gaps pose another major constraint. Comprehensive, up-to-date data on species populations, ecosystem health, and socio-economic impacts of conservation are lacking for many national parks. This limits evidence-based decision-making and weakens the ability to prioritize interventions effectively (MEA, 2005). Research efforts are often fragmented, site-specific, and poorly integrated into management planning.

Capacity gaps in technical skills, conservation science, and participatory governance further constrain outcomes. Limited training opportunities for park staff, local administrators, and community representatives reduce the effectiveness of conservation programs and stakeholder engagement (EWCA, 2016).

3.5 Summary of Key Gaps

In summary, the major gaps undermining biodiversity conservation and national park effectiveness in Ethiopia include:

- Persistent habitat loss and degradation driven by land-use pressures
- Weak governance, enforcement, and institutional coordination
- Limited community participation and inequitable benefit-sharing
- Inadequate financing and overreliance on external support
- Insufficient ecological and socio-economic data for adaptive management

These challenges highlight that biodiversity conservation in Ethiopia is not solely an ecological issue, but a deeply social, institutional, and political one. Addressing these gaps requires integrated, inclusive, and well-resourced approaches that align conservation goals with national development priorities and local livelihood needs.

4. Future Directions and Recommendations

Ensuring the long-term conservation of biodiversity in Ethiopia requires a strategic shift from reactive protection toward integrated, inclusive, and adaptive conservation approaches. While national parks remain central to biodiversity protection, their future effectiveness depends on reforms that address governance weaknesses, enhance management capacity, and reconcile conservation objectives with socio-economic realities. This section outlines forward-looking policy reforms and practical recommendations to strengthen national park management, promote community engagement, and safeguard biodiversity for future generations.

4.1 Policy Reforms for Effective Biodiversity Conservation

One of the most critical steps toward improving conservation outcomes in Ethiopia is strengthening policy coherence and implementation (Figure 2). Although the country has established biodiversity strategies, wildlife proclamations, and protected area policies, inconsistencies across sectors—particularly agriculture, infrastructure, energy, and investment—continue to undermine conservation objectives (CBD, 2021; Young, 2012). Future policy reforms should prioritize cross-sectoral integration, ensuring that land-use planning, large-scale development projects, and infrastructure expansion are aligned with biodiversity conservation goals.

A key reform area is spatial planning. Integrating protected areas, ecological corridors, and buffer zones into national and regional land-use plans would help reduce habitat fragmentation and encroachment. Strategic Environmental Assessments (SEAs) should be systematically applied to development policies and programs affecting ecologically sensitive areas, moving beyond project-level Environmental Impact Assessments (EIAs), which often occur too late to influence decision-making (UNEP, 2016).

Legal clarity and enforcement also require attention. Strengthening penalties for illegal activities within national parks, improving judicial awareness of environmental laws, and enhancing coordination between federal and regional authorities would increase compliance and deterrence (EWCA, 2016). Additionally, policies should formally recognize Other Effective Area-Based Conservation Measures (OECMs), including community-managed landscapes and customary conservation practices, as complementary tools to national parks in achieving biodiversity targets (IPBES, 2019).

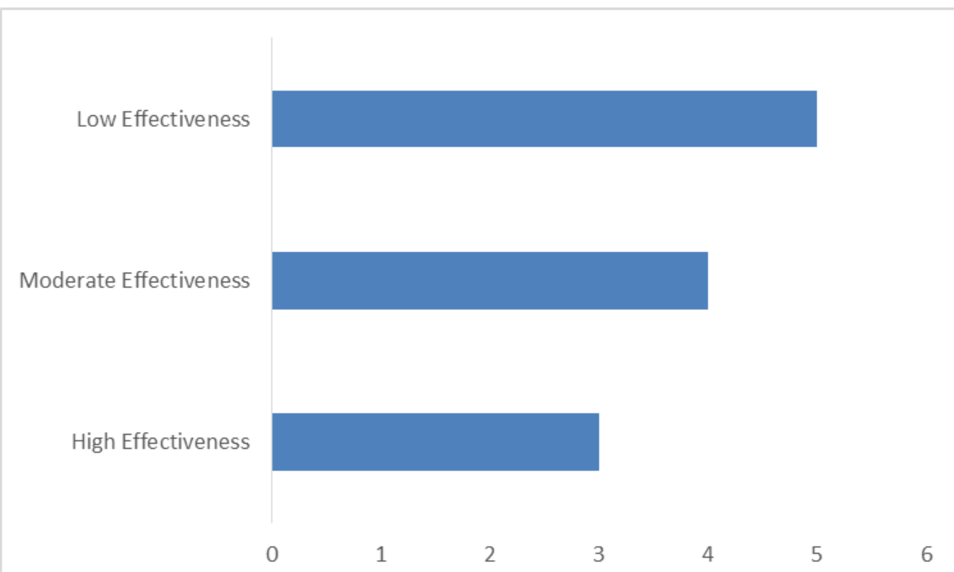

Figure 2: Ecosystem Status of National Parks

4.2 Strengthening National Park Management

Improving the effectiveness of national parks requires sustained investment in institutional capacity, financing, and adaptive management (Figure 3). Chronic underfunding remains a major constraint, limiting staffing, infrastructure development, monitoring, and law enforcement (UNEP, 2016). Future strategies should diversify conservation financing through a combination of government budget allocations, tourism revenue reinvestment, conservation trust funds, and innovative mechanisms such as payment for ecosystem services (PES).

Tourism, when carefully managed, offers significant potential to support park financing while contributing to local development. Expanding high-value, low-impact ecotourism in flagship parks such as Bale Mountains and Simien Mountains can generate revenue for conservation while minimizing ecological disturbance (Ashley et al., 2006). However, tourism development must be accompanied by clear benefit-sharing mechanisms to ensure that revenues contribute directly to park management and local livelihoods.

Strengthening human resources is equally important. This includes increasing the number of trained rangers, improving working conditions, and investing in continuous capacity-building in areas such as biodiversity monitoring, conflict management, and participatory governance (EWCA, 2016). Incorporating modern technologies—such as remote sensing, GIS-based monitoring, and digital data management—can enhance surveillance, planning, and decision-making.

Adaptive management should become standard practice across all national parks. This requires up-to-date management plans, baseline ecological data, and regular management effectiveness assessments. Lessons from parks demonstrating relatively strong performance, including Simien Mountains and Bale Mountains National Parks, should be systematically documented and shared across the protected area network to promote learning and replication (Scholte et al., 2025).

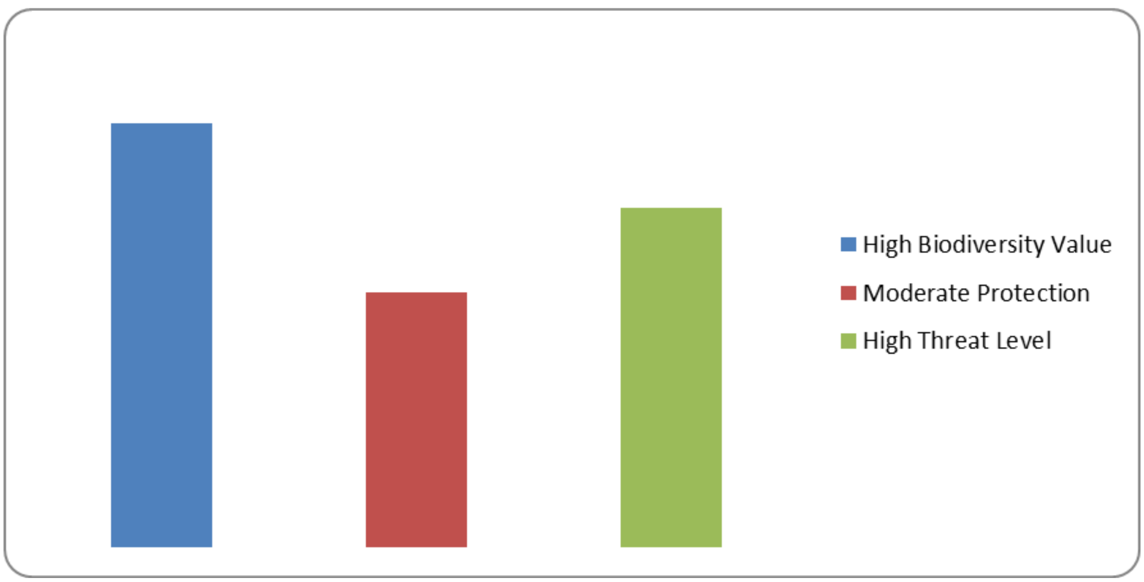

Figure 3: Biodiversity Health status of National Parks

4.3 Enhancing Community Engagement and Social Inclusion

Long-term conservation success in Ethiopia depends on the meaningful inclusion of communities living in and around national parks. Historically exclusionary conservation models have generated conflict, eroded trust, and undermined compliance with conservation regulations (Pankhurst, 1995). Future approaches must prioritize participatory, rights-based conservation that recognizes local communities as partners rather than obstacles.

Strengthening community engagement requires secure access to benefits and decision-making processes. Co-management arrangements, such as those emerging in Gambella National Park, demonstrate the potential of shared governance models that integrate conservation objectives with local development priorities (ENA, 2023). Expanding such models to other parks can enhance legitimacy, local ownership, and accountability.

Equitable benefit-sharing mechanisms are essential. Revenue from tourism, conservation employment, and ecosystem services should be transparently allocated to community development initiatives, including education, health services, and livelihood diversification (Ashley et al., 2006). Special attention should be given to marginalized groups—such as women, pastoralists, and land-poor households—who often bear disproportionate conservation costs while receiving limited benefits.

Addressing human–wildlife conflict is another priority. Future strategies should combine preventive measures (e.g., improved livestock enclosures, crop protection techniques) with compensation or incentive schemes that reduce the economic burden on affected households (Messmer, 2000). Integrating traditional knowledge and local coping strategies into conflict mitigation plans can further enhance effectiveness and community acceptance.

4.4 Long-Term Conservation Vision

Protecting Ethiopia's biodiversity into the future requires a landscape-level conservation vision that extends beyond the boundaries of national parks. While protected areas are essential, they cannot function effectively in isolation within increasingly human-dominated landscapes. Maintaining ecological connectivity through corridors, buffer zones, and sustainably managed surrounding landscapes is critical for species movement, genetic exchange, and climate adaptation (IPBES, 2019).

Climate change adaptation must be integrated into conservation planning. Identifying climate refugia, enhancing ecosystem resilience, and promoting nature-based solutions—such as forest and wetland restoration will help buffer both biodiversity and human communities against climate impacts (MEA, 2005). High-altitude and wetland ecosystems should be prioritized due to their vulnerability and importance for water regulation.

Investing in knowledge generation and learning is fundamental to this long-term vision. Strengthening partnerships between government agencies, universities, research institutions, and conservation organizations can improve data availability and evidence-based decision-making. Regular biodiversity assessments, socio-economic studies, and policy evaluations should inform adaptive management and strategic planning (CBD, 2021).

Finally, fostering a national conservation ethic is essential. Public awareness campaigns, environmental education, and integration of biodiversity values into formal education systems can help build societal support for conservation. Positioning biodiversity as a national asset—central to development, climate resilience, and cultural identity—will strengthen political commitment and long-term investment in national parks and conservation more broadly (Young, 2012).

4.5 Concluding Recommendations

In summary, the following actions are recommended to improve biodiversity conservation and national park effectiveness in Ethiopia:

- Strengthen cross-sectoral policy integration and land-use planning
- Increase and diversify sustainable financing for national parks
- Invest in institutional capacity, staffing, and adaptive management
- Expand participatory and co-management approaches with communities
- Ensure equitable benefit-sharing and conflict mitigation mechanisms
- Integrate climate change adaptation into conservation planning
- Promote research, monitoring, and knowledge sharing
- Foster public awareness and long-term political commitment

Together, these measures can transform national parks into socially inclusive, economically sustainable, and ecologically resilient pillars of Ethiopia's biodiversity conservation strategy.

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