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Park, People, Policy: Synergy Towards a Holistic Approach to Sustainable Management of Protected Areas

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Abstract

Nature exists with people and for human development globally. This realization has triggered concern of global communities such as the Convention on Biological Diversity, Global Environment Facility, United Nations Development Programme and others towards a conservation-development synergy for guaranteed nature protection. Biodiversity conservation has established a need to broaden its dimensions in the face of species and ecosystem extinction cum ever booming human population. Social emancipation, economic empowerment, cultural continuity and political stability within the frame of legislative allowance are as vital as ecological sustainability. Protected areas being an in situ means for conservation has these multidimensional roles to perform in order to be considered effective. In order to save existing protected areas from imminent extinction, this review addressed rationale behind participatory approach to conservation; significance of policy in nature protection; and the necessity to strike a balance between conservation and rural development. Significance of the rural communities within protected wildlands on spate of biodiversity and ecosystem loss cannot be neglected because sustainable livelihood is crucial to the people as sustainable conservation is to resource managers. However, enforcement and legislation stating offences with associated penalties can shape both parties in achieving peaceful coexistence. Illegal activities in parks come with forced evictions and prosecutions which on most occasions especially in impoverished rural communities, do not effectively curb these actions as would environmental education and local empowerment. Socioeconomic and cultural atmospheres mainly influence success of conservation efforts in these zones and hence should be considered in order to guarantee biodiversity in perpetuity.

Keywords: Livelihood; Conservation-development; Legislative allowance; Wildlands; Social Equity

Introduction

Conservation in the 21st century needs to expand its dimension along spatial, temporal and social scales owing to species and ecosystems extinction. Ravaging habitat loss has been highlighted to be responsible for approximately 80% of global threatened species Ervin et al., [1] and has triggered concerns locally as well as globally towards evolving approaches to conservation. Strategic and timely expansion in land mass of protected areas, is the most immediate and effective response to imminent biodiversity crisis in the world today. Humans rely on vital ecosystem functions of protected areas. As an example, 33 out of 105 of the world's largest cities source clean water from protected areas Ervin et al., [1]. Economies of many developing countries especially in Africa; Latin America and The Caribbean, depend solely on tourism revenue associated with protected areas. As human population booms, there is a resultant escalation in demand for resource with its associated loom in tension due to inappropriate resource allocation and ecological injustice. Prior to the 19th century, there has always been a 'Fortress Conservation' where people are completely excluded from nature. The birth of Yellow Stone National Park in the late 19th century, precisely 1872 put a turn in the paradigm. The experimental park was not completely participatory as it ejected locals from the resource though putting a dot on economic development. However, there has been a metamorphosis of approaches since then, in the management of nature lands under political protection. Political protection comes with a level of enforcement. Renewable natural resources protection is not an exception. Rigid; flexible; the result is always significant. In the bid to save existing protected areas and future ones from imminent extinction, this review serves as a reference for highlighting the critical factors that are fundamental to a successful conservation project. This would

be through addressing rationale behind participatory approach to conservation; significance of policy in nature protection; and the necessity to strike a balance between conservation and rural development all in an atmosphere that spells locals' participation and experiences in conservation projects under current policy environments. Rural communities of course benefit from biodiversity as explained by Ervin et al., [1] that many great cities and municipals across the globe tap their clean water from protected areas. However, this does not negate some externalities borne by the same people as a result of its protection. Overlooking this will definitely turn park to an ordinary print.

Significance of Protected Areas in Sustainable Conservation

Parks across the globe render not only ecosystem functions but also social, political, cultural, economic and peace functions. They are pools of biological diversity as well as zones of trade and cultural continuity. Some of the rural development strategies are summarized in Figure 1 where environment education seems to be the most applied strategy. Although, it may not be as acceptable to park inhabitants as much as local empowerment would Sotolu et al., [2].

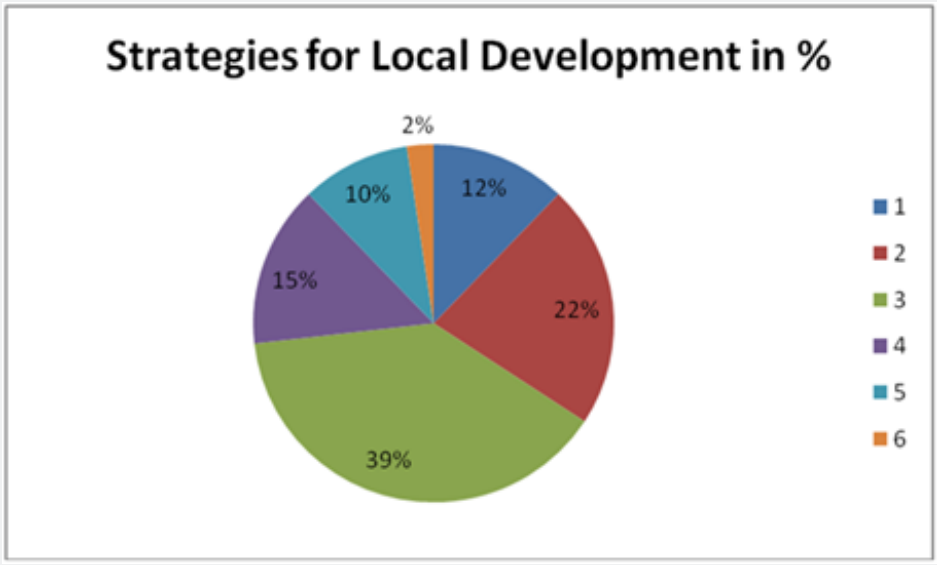

Figure 1: Strategies for Rural Development in Protected Areas in Brazil.
Source: Adapted from Chiaravalloti et al. [16].
1: conservation unit's job; 2: income generation from biodiversity exploitation; 3: environment education; 4: empowering local associations; 5: scientific research; 6: participatory monitoring.

International Efforts Towards Conservation and Development

Parties to the Convention on Biological Diversity (CBD) in February 2004 committed to a strategic set of actions known as the Programme of Work on Protected Areas with the goal to establish comprehensive, ecologically representative and effectively managed networks of terrestrial protected areas by 2010, and of marine protected areas by 2012. Measurable targets and specific timeline were set for the programmes and proposed to be guiding framework for protected areas in the next decade. Presently, global network of protected areas is directly or indirectly responsible for employment generations that rival in number with those provided by some global economy icons Ervin et al., [1].

Global environmental facility (GEF), the operating entity of the financial mechanism of the CBD, is globally recognized as the world's leading facility for aiding nations in the implementation of their obligations under the CBD Programme of Work on Protected Areas. Enhancing sustainability of protected area systems is pivotal to the GEF biodiversity strategy. This is achieved through improving: financial sustainability; protected area coverage, representativeness and connectivity; and protected area capacity and management effectiveness. Over 2,300 protected areas covering a land area of more than 634 million hectares have benefited from GEF funding. GEF has solely invested 1.89billion in protected areas with additional 4.5billion in co-financing from project partners.

United Nations Development Programme (UNDP), one of the implementing agencies of GEF, is the world's most significant contributor of technical assistance to protected areas. Since the ratification of CBD Programme of Work on Protected Areas in 2004, UNDP has supported over 700 protected areas in 55 countries, covering nearly every goal, target and action of the Programme of Work on Protected Areas. UNDP has helped to improve protected area management effectiveness across more than 85

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million hectares, and to establish new protected areas covering more than 15 million hectares. UNDP's rationale for making such a significant investment in protected areas is simple: protected areas and community conserved areas together represent as much as a quarter of the world's land surface, and this land and sea mass represents an enormous potential to contribute to human development by securing ecosystem services, maintaining the livelihoods of hundreds of millions of people, and buffering humanity from the impacts of climate change.

Nations across the globe benefit from activities of these international bodies and more:

Strength of a Legal Resolve

When wild animals raid farmlands within nature areas, farms owned by the impoverished locals; compensation for loss are not paid Sotolu et al., [3]; locals are excluded from park management; and poverty lingers on in the communities, there is bound to be conflict not only involving park managers and the rurals Ayivor et al., [4], but also between the different land users in those communities. Hunting; encroachment; killing wild animals for their trophies, all these definitely lead to arrests and forced evictions which have raised eye-brows of the local victims and seen as impediment to putting a stop to illegal activities Ayivor et al., [4]. This is because the people feel embittered, cheated and taken advantage of, on a land that was originally theirs. Human Wildlife Conflict with its associated retaliatory killing of wild animals Sotolu et al., [3]; Illegal Wildlife Trade; farmland encroachment into parks; and more will all need a resolve that involves legal facet as well as dialogue. As explained by Sotolu et al., [2], park communities are unlikely to be satisfied with enforcement and park protection laws. Until and unless unlimited access is given for resource exploitation, there will always arise issues of concern between nature and people. Limitless access however, is definitely uncompromisingly unachievable, since no system involving people can be sustainably functional without spelling out offences with associated penalties that should be effectively instituted. From poaching and disagreement over park boundaries in Zakouma National Park in Chad to eviction from Digya National Park in Ghana Ayivor et al., [4], to retaliatory killing of wild animals in Cross River National Park in Nigeria Sotolu et al., [2], friction continues and would always require resolution.

Dot on Participatory Conservation

Protected areas are vital to reducing, if not putting a halt to, biodiversity loss. They are in situ repositories of genetic materials and ancient relics of landscapes which are pivotal to socio-cultural, aesthetic, spiritual and traditional relationships of human existence Putney [5]. However, these roles are still blinking red hence, the terms 'paper park' 'island parks' describing failures Laurance [6]. Preservationists approach of 'fences and fines' 'fences and guns', and 'colonial approach' viewed people as exploiters of biodiversity and excluded them from resource protection Vig & Kraft [7]. A serious issue in nature protection is conflict between protected area managers and support zone communities. These includes disagreement and disputes over access to resource and its control involving arrests, prosecutions, violent confrontations and even deaths sometimes Ayivor et al., [4]. As there are benefits from a collective system for multiple objectives of resource management, so also are there challenges to be overcome as depicted in Table 1.

Table 1: Potential Benefits and Risks in Managing Protected Areas for Multiple Objectives.

Synergy	Benefits	Trade-off
Conservation- Climat e change	maintaining large tracts of intact ecosystems, such as grasslands and forests, which are ideal for climate change adaptation and mitigation because they are more likely to be resilient to climate impacts	mitigation can involve practices that reduce biodiversity, for example managing forests for short rotations and favoring fast-growing, early successional
		species, at the expense of mature, climax species
Conservation-Ecosystem services	through restoration efforts, such as removing invasive species from grass-lands and restoring fire processes, typically restores ecosystem services	Managing a riparian system to sustain the volume of water flows may be inconsistent with the hydrological regimes needed to
		sustain key ecological processes (e.g., flooding)
Conservation-Sustainable livelihoods	Intact, functioning ecosystems are much more likely to provide reliable and secure livelihoods than more vulnerable systems, reducing the vulnerability of resource-dependent communities	Managing wild biodiversity for sustainable livelihoods, such as non-timber forest products, frequently leads to substi-tution, domestication or extinction, particularly if safeguards are not
		in place
Ecosystem services-Sustainable livelihoods	Managing biodiversity to maintain ecosystem services disproportionately benefits the poor, who depend on natural resources and ecosystem services the most	Managing grasslands to sustain grazing through annual fires may harm important medicinal plants and thatch resources

Source: Adapted from Ervin et al. [1].

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Case Scenarios

From Ayivor et al., [4], it was learnt that in 2006, a border dispute in Kyabobo National Park resulted in the tragic death of two Wildlife Officials (Ghanaweb, 2006). Another incident occurred in Bui National Park in 2007, when a poacher lost his life for resisting arrest and attacking a Wildlife Official (Ayivor, 2007). Local communities attacked Wildlife Officials and burnt down one of their camp sites. Both incidents were resolved through the intervention of local chiefs and Wildlife Officials from the national headquarters'. In addition, 'In 1989, 2002 and 2006, three major eviction exercises were carried out in Digya to move mainly migrant communities and their families (squatters) who were allowed entry into portions of the park by local chiefs. These chiefs claimed that cash compensation for expropriation of their lands had been paid to wrongful claimants and, therefore, considered themselves as rightful owners of these portions of the park. The exercises mostly targeted squatters who often resisted eviction, thus, compelling Wildlife Officials to seek the support of the military to evict them. During the 2006 eviction exercise, nine people lost their lives through a boat accident that occurred while they were being ferried across Volta Lake. The eviction exercise of 2006 was abandoned due to public outcry and a court injunction Myjoyonline [8].

Metamorphosis of Global Approaches to Conservation

In the bid for biodiversity protection, national parks were established across Sub-Saharan Africa primarily for hunting and tourism by the colonials. This did not go without the expulsion of the original custodians of the resource- the locals Adams & Mulligan [9]; King [10]. Late 19th century witnessed the birth of a reconsideration of the 'fortress' approach by the establishment of the Yellowstone National Park in 1872 in the United States of America. It was an 'experiment park' based on attempting to merge conservation with economic development King [11]. Of course, the transformation was not sudden but gradual, as even at this time people and park were still mutually exclusive. Colonialism and the increasing promotion of need for sustainable development aided further designation of nature for conservation across the globe King [11]. Concern over loss of biodiversity and the fear of consequent extinction has greased the push for establishment of more protected areas worldwide. From the beginning to the mid-20th century which marked the end of the Classic Model of Protected Area management (Table 2), a meager 600 protected areas were in operation.

At about 1999, there were nearly 3000 protected areas Ghimire [12]. Approximately 5% of the earth's land mass was protected as a result of more than 25,000 protected areas towards the end of 20th century characterized by the era of the Modern Model of protected area management as shown on Table 2. Currently, over 11.5% of the planet's land mass is protected due to the creation of more than 100,000 protected areas IUCN & UNEP [13]. The Emerging Models as against Traditional models (Figure 2) have not been receiving so much attention by parks all over the globe Ervin et al. [1]. Regions of higher biological diversity have been established to also be areas of higher human population densities which manifest higher rates of social and economic poverty King [11] but higher levels of cultural diversity. Thus, raising eyebrows over alienation of the rurals from the resource through which they derive sustenance. This resultantly makes implementation of management strategies more difficult Sotolu et al., [2]. Realization of the significance of the locals' social and economic empowerment through conservation has led park managements in the 21st century to pay more attention to that angle (Figure 3).

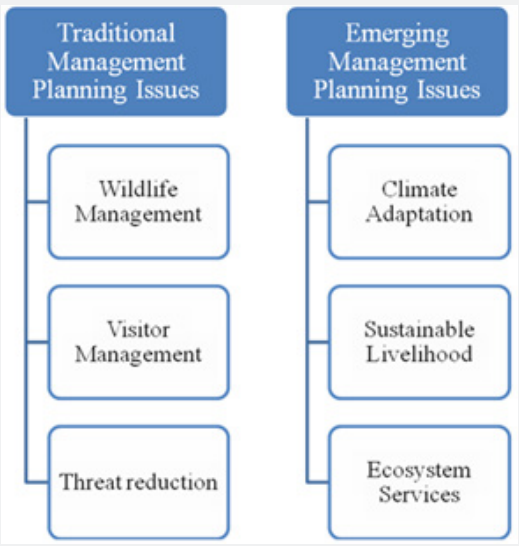

Figure 2: Traditional versus Emerging management Planning Issues As Conservation Strategies
Source: Adapted from Ervin et al. [1].

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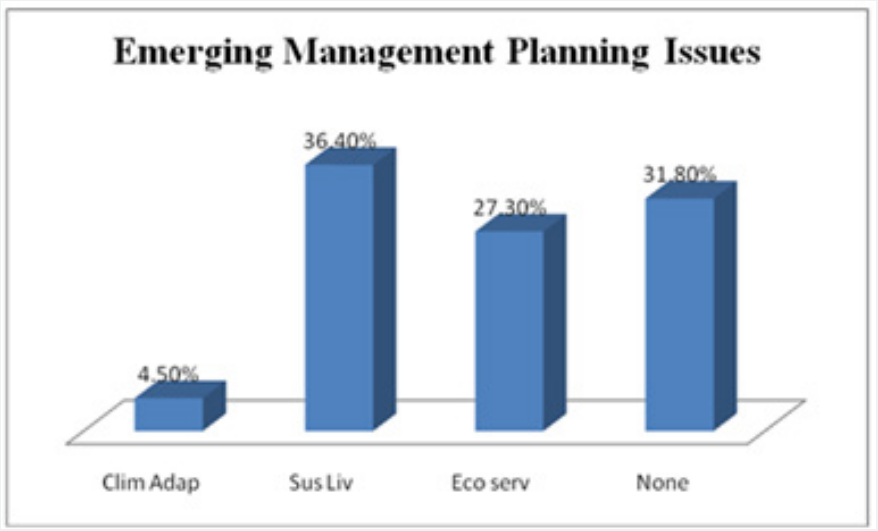

Figure 3: Evolution of Park Management Planning Issues across the Globe.
Source: Adapted from Ervin et al. [1].
Clim Adap- Climate Change Adaptation; Sus Liv- Sustainable Livelihood; Eco Serv- Ecosystem Services.

Table 2: Succession of Models in Protected Areas Management

Issues	Classic Model (Mid 1800s-1970s)	Modern Model (1970s-Mid 2000s)	Emerging Model (Mid 2000s and Beyond)
Rationale for Establishing Protected Areas	Set aside for productive use	Concurrent social, ecological and economic objectives	Strategy to maintain critical life support systems
Purpose of Protected Areas	Established primarily for scenic values rather than functional values	Established for scientific, economic and cultural reasons	Established to support ecosystem services, promote climate change adaptation, resilience and mitigation
Management Purpose	Managed mostly for park visitors	Managed for the Locals	Managed for social, economic and ecological values emphasizing maintenance of ecosystem services

Source: Ervin et al. [1].

Impediments to a Collective system

Nature areas across the globe are characterized by human population pressure, putting a lot of stress on biodiversity through over exploitation. As noted by Ayivor et al., [4], high human population density of indigenous fishing and farming communities in addition to migrants who moved into the area with the creation of the Volta dam surround Digya National Park in Ghana, putting socio-economic pressure on the park. Some of these are poverty, illegal entry, poaching and livestock grazing among others. Adequate well-trained and equipped staff per unit patrol area is essential for effective enforcement. This capacity is lagging especially in West African parks. Ghanaian Digya National Park and Shai Hills Resource Reserve had 0.016 and 0.198 effective patrol staff per km^2 and operational budget of US$2.5/$km^2$ and US$58/$km^2$ respectively Jachmann [14], while James et al., [15] estimated ideal cost for effective protected area management to be US$250/$km^2$. Park officers often decry insufficient fund and equipment to access difficult terrains, sometimes requiring chopper or high-powered motor boats over lakes Ayivor et al., [4].

Ecological justice describes the fair treatment and meaningful involvement of all people regardless of race, colour, national origin, or income with respect to the development, implementation and enforcement of environmental laws, regulations and policies. Participatory approach that fringes on ecological injustice is bound to collapse and lead to mistrust. Benefits from protected area management should be equitably shared and its challenges collectively accounted for. As narrated by Ayivor et al. [4], an elderly woman reported 'I derive no benefit from the park but instead crop losses. When I get to my farm and encounter an elephant feeding on my crops, I can only create noise to drive it away. If that fails, I just look on helplessly as my farm is destroyed. Often, I get so devastated and have no option but to weep all the way back home'. In another narration, locals were reported to have complained that, 'We were served an eviction notice without

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us being told where to go. Two weeks after the notice, we were forcefully evicted and were not allowed even to salvage our belongings, including food crops and livestock. Wildlife officials were highhanded on us and there was no one to speak for us. We had to move at night to the opposite side of the Sene River with our children without any protection against the harsh environment. We had to pitch tents using improvised local materials as temporary house.' Situations like this do not exclude fatalities as was described during an eviction exercise in 2006, when settlers were overloaded in privately-operated boats leading to deaths of tens of evacuees in a protected area in Ghana Ayivor et al., [4]. The conservation that risks lives of the communities will definitely meet with public outcry and violence.

Synergy Itself

Most African nature lands were put under protection by the colonials who ruled their respective countries before the 1960s when those nations got their independence. Prior to park protection, people exploit biodiversity without fear of prosecution. Although resource use in most rural environments were guided by traditional and customary laws which were not based on empirical deductions, this kind of protection was not going to yield sustainable result as it did not involve arrest or prosecution. Moreover, traditional protection of resource only existed in few nature areas, not in all. At these periods, people relied solely on nature for sustenance. There were killing of wild animals (hunt and kill); grazing by livestock; logging; wood collection; non-timber forest products (NTFPs) harvesting; farming; fishing; and encroachment which were all unrestricted (A). Wildlife on the other hand was a part of the people's cultural and traditional setting (B). Then, issues were only between people and nature as depicted in Figure 4.

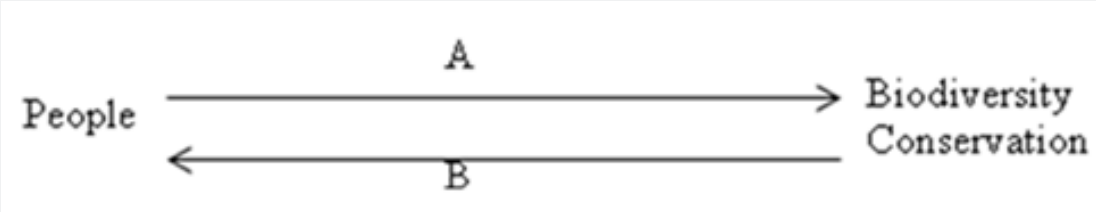

Figure 4: Schematic Representation of People-Nature Relationship.

After protection, policy comes in to act on both the people and the resource itself. People exert more pressure on nature alongside encroachment and urbanization, seeing the resource as a 'lost glory' (C). Wild animals raid locals' farmlands; carnivores kill and transmit zoonosis to livestock and then to people (D). Policy sought to protect nature (E) while restraining the locals (F). Resultant scenario is that where people are evicted from 'their lands' and alienated from resource management; conflicts arose between park managers and rural communities over illegal resource exploitation; arrests are made; and offenders are prosecuted (G) although resources are protected and 'fortress conservation' is achieved (H) as seen in Figure 5.

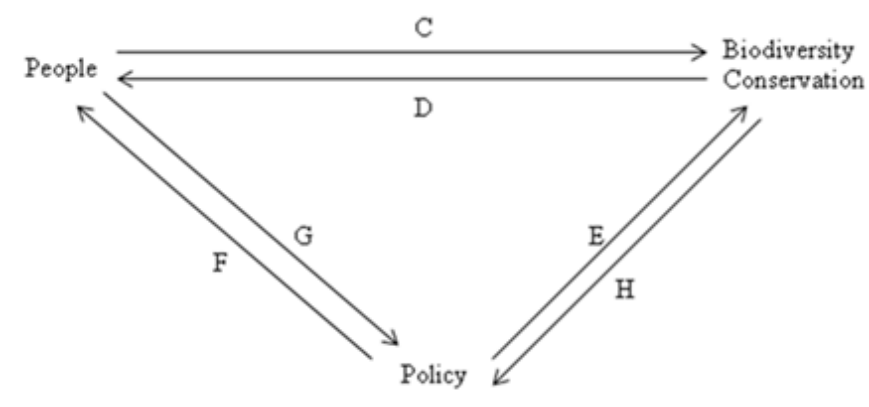

Figure 5: Schematic Representation of a People-Park-Policy Scenario

There had to be adjustments on the part of the people and nature managers in order to bring a synergy tailored towards a combined and correlated action aimed at bringing harmony into the system with minimized friction. This requires inputs from other stakeholders as well – government; non-governmental organizations (NGOs), local and international conservation

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bodies; conservation researchers and research institutes; the private sectors; and the like, focusing people at the centre of conservation programmes. This will give locals a sense of ownership and stewardship over the resource, hence regulating exploitation to ensure sustainability (I). The resource remains a part of the people's culture (J); policy protects lives, limbs (K) and nature (L); conservation goal is achieved (M); and people no more see park management as infringement but realize need to support conservation efforts (N). Conservation-hinged benefits provided to the people on regular basis would ensure that resources are safe with minimal enforcement and patrol duties as seen in Figure 6.

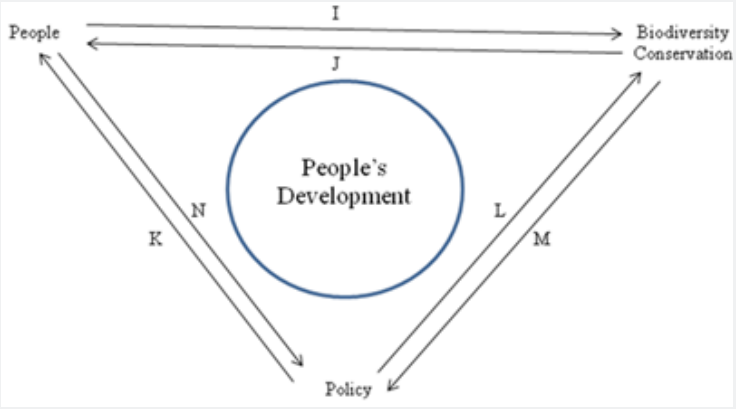

Figure 6: Schematic Representation of a People-Centered Conservation Initiative.

Conclusion and Recommendations

Biodiversity is an endowment for human development-renewable, regenerative, but exhaustible and hence should be jealously protected. Parks are managed by people while policy guides and guards both towards a peaceful co-existence. Parks require adequate, well-armed paramilitary functions per square kilometers of the park territory for effective enforcement. People require alternative means of livelihood and involvement in park management for efficient participation. Policy requires to be flexible towards a sustainable conservation. Dialogue is a vital tool in finding ways forward [16,17]. Regular outreach programs between the park and the people would create a soft pedestrial for mutual trust and cooperation. Creating alternative livelihoods like bee keeping, handicraft using local materials and small-scale livestock production, would go a long way in synergizing economic development and sustainable conservation within the limits of effective enforcement. Renewable natural resource under political and legal protection is more likely to be sustainable if guiding policy and principles are all-encompassing and effectively implemented. From the on-going, factors responsible for both the success and failure of conserving biodiversity in National Parks in various contexts were socioeconomic and cultural in nature. These realizations pitch that future conservation approaches in parks should place more emphasis on the human dimension of biodiversity conservation than purely scientific studies of species and habitats.

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