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The Western Ghats Conservation Dilemma: Balancing Development and Conservation

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Abstract: The Western Ghats, a biodiversity hotspot and UNESCO World Heritage site, face a significant conservation dilemma as efforts to preserve its unique ecosystems often conflict with developmental pressures. Spanning across six Indian states, the region is home to rich flora and fauna, including numerous endemic species. It plays a vital role in maintaining the ecological balance, influencing the climate and supporting the livelihoods of millions. However, the need for economic development in the region, driven by demands for infrastructure, agriculture, mining and urbanization, presents significant challenges to conservation efforts. The dilemma arises from the need to balance environmental sustainability with socio-economic development. On one hand, conservationists argue for stringent measures to protect biodiversity, citing the region's high levels of species endemism and the ongoing threats from deforestation, habitat fragmentation and climate change. Various government and non-governmental organizations have called for the implementation of protected areas, restrictions on land-use changes and sustainable practices to mitigate the impact of human activities. Reports like the Western Ghats Ecology Expert Panel (WGEEP) and the Kasturirangan Committee have proposed regulations to prioritize conservation in ecologically sensitive areas. However, these recommendations have often been met with resistance from local communities and stakeholders who fear that conservation policies will restrict their access to resources and impede economic opportunities. Conversely, developmental activities such as agriculture, hydropower projects, mining and infrastructure development are deemed necessary to meet the economic aspirations of the growing population in the Western Ghats. Thus, this study is an attempt to evaluate the conservation dilemma across the Western Ghats. Policy frameworks that incorporate the perspectives of local communities, along with scientific recommendations, can enhance the acceptance and effectiveness of conservation measures. The need of the hour in achieving sustainable development in the Western Ghats while accommodating the legitimate development aspirations of the region.

Keywords: Western Ghats, Biodiversity, UNESCO World Heritage Site, Conservation Dilemma

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Introduction

The Western Ghats are one of the eight "hottest hotspots" for biological diversity in the world, spanning around 1,600 kilometers along the western coast of India. These ancient mountain ranges, which are renowned for their extraordinary natural beauty, are home to a wealth of endemic species, including more than 7,400 plant species, 139 animal species, and 508 bird species (Molur *et al.*, 2011). Beyond the plants and animals they support, the Ghats are important for maintaining soil health, replenishing groundwater and controlling the monsoon patterns that propel India's agriculture. The Western Ghats are essential to worldwide conservation efforts as well as to India because of its biodiversity and vital ecological functions (Deepu *et al.*, 2023). However, as commercial interests, demographic explosion and human development gradually intrude on these delicate ecosystems, this very diversity has turned into a source of conflict (CEPF, 2007). For local people, conservationists, and legislators alike, striking a balance between the demands for development and conservation objectives has become a complex issue now. The Western Ghats are under a lot of strain due to resource extraction, urbanization and rapid industrialization (Raju and Raju, 2016; WWF, 2017). Infrastructure related to roads, dams and tourism exacerbates the problem by causing direct habitat degradation as well as indirect effects such as pollution and conflicts between people and wildlife. Given the area's significance to India's agricultural and energy industries, there is no denying the necessity for economic growth and the raising of local residents' standards of living. These development initiatives, however, frequently ignore the delicate balance needed to preserve ecological stability. The conservation conundrum facing the Western Ghats is a prime example of the greater global issue of striking a balance between ecological sustainability and socioeconomic growth, which will continue to shape environmental policy and action in areas with abundant biodiversity around the globe (Jayaram, 2016; Alex, 2023). Thus, this

study is an attempt to evaluate the conservation dilemma across the Western Ghats

The ecological significance of the Western Ghats

The Western Ghats are regarded as one of the world's hotspots for biodiversity and are widely acknowledged for their ecological value. These ancient mountains are home to a remarkable diversity of flora and wildlife, many of which are peculiar to the area (Gunawardene *et al.*, 2007). The high biodiversity and endemism of the Western Ghats are a result of their distinct biogeography, which includes a plethora of landscape, grasslands and river systems. Essential ecosystem services that maintain environmental stability at the regional and national levels are provided by this ecological richness. The monsoon, which sustains agriculture and provides water to millions of people in southern India, is mostly controlled by the Western Ghats (Ramachandra, 2018; Paul *et al.*, 2018). The Western Ghats also provide a steady supply of water for drinking, irrigation, and hydroelectric generation as the source of several rivers, highlighting their vital role in regional water security. In addition to protecting biodiversity, the Western Ghats are important for maintaining vital ecosystem services that directly support human livelihoods and environmental health. The difficulties facing conservation efforts in the Western Ghats are indicative of larger problems in the conservation of biodiversity worldwide, where ecological preservation and the desire for economic development sometimes clash. Additionally, the flora across the Ghats act as a massive carbon sink, mitigating the effects of climate change by storing a significant quantity of carbon (Kale *et al.*, 2009; Ramachandra and Setturu, 2020). The importance of the Western Ghats in sustaining both natural and human life is highlighted by the fact that millions of people in southern India rely on the rivers that flow from them for their water needs.

Development pressures on the Western Ghats

The Western Ghats are a popular destination for development projects due to its advantageous position and plenty of resources. The main sectors that have contributed to invasion and deterioration include mining, tourism, agriculture and the production of hydroelectric power. Growing demand for food and cash crops has fuelled agricultural expansion, which has resulted in substantial deforestation as forests are being turned into farms and plantations (Jha *et al.*, 2000). This change reduces soil fertility, interferes with regional water cycles and affects biodiversity. The Ghats are also home to a wealth of mineral resources, including as manganese, bauxite, and iron ore, which draw a lot of mining activity. Mining has a significant negative influence on the environment, resulting in habitat destruction, soil erosion, river and water body contamination, and heightened susceptibility to landslides (Padma, 2018; Nair, 2023). Another significant factor is the development of hydroelectric power projects, as the rivers of the Ghats provide ideal conditions for the building of dams. Despite the fact that hydroelectricity produces sustainable energy, the construction of dams and reservoirs damages river ecosystems, destroys habitats and frequently necessitates the eviction of local populations (Gadgil, 1979; Ramachandra *et al.*, 2019). Indigenous tribes have been living sustainably in the Ghats for centuries, and these projects not only endanger biodiversity but also interfere with their way of life. The Ghats' distinctive landscape and biodiversity have drawn tourists, which has resulted in a rapid increase of infrastructure, including highways, hotels and resorts. Even though tourism boosts the economy, if left unchecked, it can result in pollution, habitat destruction and an increase in conflicts between people and wildlife (Varghese and Natori, 2024). Road and rail construction are examples of infrastructure development that fragments habitats and introduces invasive species, posing further hazards to native flora and fauna. These actions have the combined impact of severely reducing biodiversity and degrading ecosystem services that are vital to human and

environmental well-being, including as flood control, carbon sequestration, and water purification.

Conservation initiatives and policies

The Indian government has started several conservation initiatives in partnership with international groups to protect the Western Ghats. Among the most well-known are the reports and recommendations of the Western Ghats Ecology Expert Panel (WGEEP) and the Kasturirangan Committee. Prof. Madhav Gadgil led the 2011 WGEEP report, which recommended creating Ecologically Sensitive Zones (ESZ I, II and III) with varying levels of limits on developmental activities in the Western Ghats (MoEF, 2011). The report placed a strong emphasis on a participatory approach that includes local communities in conservation efforts. The Gadgil report's recommendation for stringent regulations in ecologically vulnerable areas was controversial since local communities, stakeholders and development proponents saw it as restrictive which also gravely affects livelihood options (Kurian and Vinodan, 2023). In response to criticism of the Gadgil report, the Kasturirangan Committee was formed in 2012 to study how to implement WGEEP report in a scientific and holistic manner. The Kasturirangan report recommended creating a more constrained area under the Ecologically Sensitive Area (ESA) designation and permitting controlled development activities. However, there was also criticism to this report, as notification under ESA regime will derail livelihood options and agrarian activities. In 2012, UNESCO recognized the Western Ghats' exceptional biodiversity by designating 39 of its places as World Heritage Sites (WHC, 2012). This designation has helped raise awareness of the need to preserve the Ghats, even though there are still problems finding a balance between development and heritage status. These policy approaches show how difficult it is to achieve a balanced approach.

Conservation vs livelihood

Stakeholders frequently oppose the implementation of conservation regulations because they worry about losing their jobs, being uprooted and having their customs restricted (Menon and Karthik, 2019). For decades, numerous indigenous groups in the Ghats have managed trees and wildlife by applying their expertise to live sustainably. However, these sustainable traditions can be upset by broad limits on land use under conservation policies, which can cause animosity and disputes between local communities and conservation authorities, like in Nagarhole (Fridays for Future Karnataka *et al.*, 2022). The socioeconomic effects of these limitations are exacerbated by economic reliance on resource exploitation and a lack of alternate sources of income, which makes some communities hostile to conservation initiatives. In the Western Ghats, striking a balance between livelihood demands and conservation calls for a sophisticated, community-based strategy. These two goals can be balanced with the assistance of community-managed conservation projects, eco-friendly agriculture methods and policies that encourage sustainable resource usage. Participating in decision-making procedures with local populations can also promote collaboration and lessen resistance. In many regions of the Ghats, community-based conservation models have proven effective because they enable locals to profit from conservation initiatives through ecotourism, agroforestry and sustainable forest product collection (Hegde *et al.*, 2023). Concerns about livelihood can be further allayed as biodiversity conservation is improved by government programs that offer alternate sources of income, financial incentives for sustainable practices and assistance for ecotourism endeavours.

Challenges in balancing conservation and development

In areas with high biodiversity and high socioeconomic needs, striking a balance between conservation and development is a critical task. In biodiversity hotspots like the Western Ghats,

where conservation is essential for ecological stability, finding a balance between protecting ecosystems and providing for the economic demands of expanding populations is especially difficult. Nonetheless, local populations depend on these regions for forestry, tourism, agriculture and other sources of income. Conflicts between conservation goals and development demands result from this dynamic, which has important ramifications for biodiversity, climate resilience and human welfare. The loss and fragmentation of habitat brought on by growing agricultural land, urbanization and infrastructure developments is a significant obstacle to striking a balance between conservation and development. Clearing forests, draining wetlands or changing river systems are frequently required for development, which has serious ecological effects like destroying species habitat, interfering with animal migration routes and reducing ecosystem services like carbon sequestration and water filtration. Ecosystems are more susceptible to invasive species and environmental disruptions when habitats are fragmented, which lowers resilience and biodiversity. Long-term hazards to ecosystems and communities are presented by these changes, which also alter local climate conditions, intensify natural disasters and upset regional ecological balance.

Since many rural people depend on woods and rivers for both their daily necessities and income, socioeconomic dependence on natural resources makes conservation efforts even more difficult. Local populations frequently oppose conservation programs that limit access to these resources because they fear losing their means of subsistence.

For instance, indigenous and local communities in the Western Ghats have long relied on sustainable agriculture, fishing and forestry. However, as conservation measures could not offer sufficient alternative livelihood possibilities, sweeping restrictions on resource use might cause conflict (Sangha *et al.*, 2024). These socioeconomic forces highlight the necessity of conservation tactics that boost local

economy in addition to preserving the environment, frequently through ecotourism, sustainable agriculture or community-based conservation. The balance between development and conservation is further hampered by regulatory and policy issues. Economic and environmental goals must be integrated into effective policies, yet competing stakeholder interests sometimes lead to inconsistent or fragmented laws. Although conservation measures like the creation of Ecologically Sensitive Zones (ESZs), Ecologically Sensitive Areas (ESAs), Wildlife Sanctuaries, National Parks, Tiger Reserves etc. for conservation of environment and also to mitigate climate change, a large number of people are evicted from their homeland in the name of conservation. Thus, success of conservation projects depends on financing, political commitment, transparent policies and intergovernmental cooperation, thereby limiting the number of conservation refugees in the process (Dowie, 2009).

The way forward

In short, creative solutions that promote both development and conservation to address the conservation conundrum facing the Western Ghats are the need of the hour. It should be noted that the Ghats are also home to many indigenous and local groups that depend on these ecosystems for small-scale businesses, farming and forestry. In the Western Ghats, striking a balance between conservation and sustainable development has proven difficult because conservation initiatives frequently clash with local communities' socioeconomic interests and regional development objectives. A balanced strategy that protects biodiversity while honouring the livelihood requirements of the populations that rely on these resources is needed to resolve this conundrum. The Western Ghats' conservation policies have historically centered on creating protected areas with stringent limitations on resource extraction and land use which frequently place restrictions on local communities, impacting their ability to access vital resources and engage in

income-generating activities, even though they are vital for protecting biodiversity and halting ecological degradation. Local populations may become acrimonious of blanket prohibitions on particular activities, such the expansion of agriculture and oppose conservation initiatives as a result. Since individuals who depend on natural resources suffer financially under restricted conservation regulations, the lack of other livelihood options for these groups makes matters worse. Community-inclusive conservation techniques that uphold traditional knowledge and practices while encouraging sustainable resource use are essential to a balanced approach to conservation in the Western Ghats. Community-based conservation, in which local residents actively participate in the management and preservation of ecosystems, can accomplish this. In addition to helping to preserve biodiversity, models like community forestry, agroforestry and controlled ecotourism can enable local communities to profit economically from conservation. For example, ecotourism projects run by local communities can make money by using sustainable tourism methods, which offers a financial incentive to preserve natural resources rather than use them in an unsustainable manner.

Developing regulations that protect environmental integrity while taking into account local socioeconomic circumstances is a crucial component of a balanced conservation strategy. More successful conservation policies that take into account a range of interests can result from multi-stakeholder governance are pivotal. Communities must be empowered to embrace environmentally friendly lives through government support in the form of market access, capacity-building initiatives, and subsidies for sustainable practices. Therefore, combining conservation with sustainable development and making sure that local populations participate in and benefit from conservation initiatives are essential components of a balanced approach to Western Ghats conservation. Such a strategy can promote long-term resilience in the Western

Ghats, protecting its distinctive biodiversity and improving the standard of living for its inhabitants by acknowledging the significance of both ecological integrity and socioeconomic stability. The Western Ghats may become a model of peaceful coexistence between nature and human needs if conservation and development were to work together and adopt an inclusive, cooperative approach.

Conclusion

The Western Ghats conservation dilemma reflects greater difficulty of striking a balance between development and conservation. The way forward calls for a multipronged strategy that incorporates sustainable development principles, community engagement and policy reforms. India can only guarantee that the Western Ghats will continue to be a healthy ecology for upcoming generations by encouraging cooperation among all parties involved. To sum up, the tension between livelihood and conservation in the Western Ghats emphasizes the necessity of a multi-stakeholder, integrated strategy that takes socioeconomic and ecological factors into account. Policies that safeguard biodiversity while simultaneously bolstering local populations' economic resilience are necessary to ensure the Ghats' long-term preservation. Achieving a balance between protecting the natural diversity of the Western Ghats and promoting the livelihood and development aspirations of the communities that rely on it requires a participatory strategy that incorporates local perspectives in conservation planning and provides sustainable livelihood options. The conservation vs livelihood dilemma in the Western Ghats presents a challenging issue as the preservation of the environmental integrity of this vital region while preserving the economic well-being of the local populace will only guarantee long term conservation outcomes.

Ethical Statement

This is a review article hence no Ethical Approval needed.

Author Contributions

Each author has contributed equally to the study's planning, analysis, writing, and editing. All authors have read and agreed to the published version of the manuscript.

Conflict of Interest

The authors declare no conflicts of interest.

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