



Environmental Planning for Ecotourism in Sensitive Ecosystems and Protected Areas of Iran: A Framework for Achieving Sustainable Conservation

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ABSTRACT

Drawing on a literature review on ecotourism and sustainable tourism in protected areas, the study aims to propose an environmental planning framework for Iran that reflects the country's climatic, geographic, cultural, and institutional contexts and can serve as a model for the sustainable conservation of sensitive ecosystems and the sustainable management of tourism. This study seeks to answer the following questions: What are the key opportunities, challenges, and research gaps in managing ecotourism in protected areas? How can an indigenous, sustainability-oriented framework for Iran be adapted to the country's specific climatic, institutional, and environmental conditions? This study conducted a systematic review of the literature on ecotourism, sustainable tourism, environmental planning, and protected areas. Persian and English keywords were searched across ScienceDirect and Google Scholar for 2020–2026. After screening and the removal of duplicates, 21 articles were selected for final analysis. Findings reveal that nature-based tourism in protected areas can strengthen local economies, yet significant challenges persist, including land-use changes, pollution, socio-cultural disruptions, climate change impacts, human–wildlife conflicts, and inadequate infrastructure. The literature emphasizes carrying capacity, stakeholder education, participatory planning, collaborative governance, and robust legal frameworks as key management strategies. The review also reveals a clear research gap: most Iranian studies are confined to local or regional scales, focusing on individual sites without offering a coherent, transferable framework, while international findings require substantial adaptation to Iran's specific conditions. This study proposes a locally adapted framework based on environmental protection, economic development, community participation, ecosystem vulnerability, carrying capacity, and sound policy-making. It accounts for Iran's arid and semi-arid climate, institutional misalignment, and competition over scarce water resources. The result is a framework in which carrying capacity is climate-sensitive, zoning is institutionally aligned, participation is livelihood-oriented and grounded in equitable benefit-sharing, and monitoring is adaptive and data-driven. This model provides an operational basis for strategic ecotourism planning, facilitating the transition from mere exploitation to sustainable conservation in Iran's sensitive ecosystems and protected areas.

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Introduction

Tourism is an important driver of economic development, employment, income diversification, and poverty reduction, particularly in developing countries. Natural areas, protected landscapes, and biodiversity-rich ecosystems are major destinations for nature-based tourism while also providing essential ecosystem services. However, increasing tourism pressure, uncontrolled recreational activities, land-use changes, pollution, climate change, and biodiversity loss can threaten sensitive ecosystems. Without appropriate environmental planning and management, tourism development may intensify resource degradation and create conflicts between conservation objectives and local economic interests. Ecotourism provides an approach for linking biodiversity conservation with responsible tourism, local economic development, environmental education, and community participation. Effective ecotourism planning therefore requires attention to ecological capacity, visitor management, local livelihoods, stakeholder participation, and institutional arrangements, supported by tools such as carrying-capacity assessment, zoning, participatory planning, monitoring, and collaborative governance. Iran has considerable ecotourism potential due to its diverse climates, ecosystems, landscapes, protected areas, and cultural heritage. Nevertheless, ecotourism development faces environmental, socio-economic, and institutional challenges, including water scarcity, ecosystem vulnerability, inadequate infrastructure, livelihood dependence on natural resources, and institutional fragmentation. Existing Iranian studies have largely focused on specific destinations or individual management issues and have rarely provided an integrated and transferable planning framework. Therefore, international experiences require adaptation to Iran's climatic, geographical, socio-economic, cultural, and institutional conditions. Accordingly, this study systematically reviews recent literature on ecotourism and sustainable tourism in protected areas to identify major opportunities, challenges, management strategies, and planning requirements and to provide the conceptual basis for an integrated framework for sustainable ecotourism planning in Iran.

Method

This study employed a systematic literature review to identify and synthesize recent evidence on ecotourism, sustainable tourism, environmental planning, and protected areas, with emphasis on environmental, socio-economic, institutional, and planning dimensions relevant to the Iranian context. Persian and English studies published between 2020 and 2026 were searched in ScienceDirect and Google Scholar using keywords such as "ecotourism," "protected areas," "environmental planning," "environmental impacts of ecotourism," and "sustainable conservation." In ScienceDirect, an advanced search restricted "Ecotourism" and "Protected areas" to article titles and research articles, yielding 110 records.

Titles and abstracts were screened based on predefined inclusion and exclusion criteria, and duplicate or irrelevant studies were removed. Finally, 21 articles (15 English and 6 Persian) were selected for analysis. The selected studies were comparatively reviewed to identify major opportunities, challenges, management strategies, and planning requirements. Findings were thematically organized around ecological conservation, carrying capacity, community participation, economic benefits, governance, policy, environmental education, and monitoring, providing the basis for developing a context-sensitive framework for sustainable ecotourism planning in Iran.

Results

The systematic review identified key opportunities, challenges, and strategic solutions for ecotourism management in protected areas. Findings indicate that developing nature-based tourism, particularly in regions near international borders, can attract support and strengthen local economies. However, significant challenges persist, including land-use changes,

pollution, socio-cultural disruptions, and the intensification of climate change impacts. Resource scarcity and human-wildlife conflicts, alongside poverty and inadequate infrastructure, remain primary barriers to sustainable development. To mitigate these conflicts, the literature emphasizes several management interventions: calculating carrying capacity, diversifying recreational activities, and enhancing local welfare through participatory planning. Stakeholder education and international branding of protected statuses are crucial for balancing conservation and utilization, with tour guides playing a pivotal role in promoting environmental awareness. Furthermore, tourists' attitudes and their awareness of conservation needs are decisive factors for the success of ecotourism destinations.

Results also highlight the importance of "Collaborative Governance" and benefit-sharing mechanisms. Sustainable success depends on structured interactions among stakeholders, transparency, and conflict management to link biodiversity conservation with local livelihoods. Strategic educational planning along tourist routes can foster pro-environmental public opinion while improving socio-economic indices. Finally, researchers stress the necessity of integrated policy-making and robust legal frameworks that simultaneously prioritize ecological capacity and economic.

Conclusions

This study identifies the dimensions and components governing ecotourism environmental planning in sensitive ecosystems and protected areas to develop the groundwork for a comprehensive indigenous framework that aligns tourism development, local community participation, and the sustainable conservation of natural resources. The review shows that most Iranian studies have been limited to local or regional scales, focusing on capacity assessment or the challenges of specific sites without offering a coherent, transferable framework. Conversely, international findings stem from geographic, institutional, and environmental contexts that differ markedly from those of Iran and therefore require substantial adaptation to its climatic variability, biodiversity, and local governance structures.

The literature reveals a clear gap in studies that conceptualize ecotourism planning as an integrated model aligned with sustainable conservation in the Iranian context, particularly regarding the systematic linkage of ecological, socio-economic, and institutional dimensions; the institutionalization of local community participation as a core pillar rather than a peripheral variable; and a concrete policy framework capable of balancing development-oriented exploitation with conservation requirements.

Accordingly, any proposed framework must rest on core pillars environmental protection alongside economic development, community participation, sensitivity to Iran's specific conditions and ecosystem vulnerability, carrying capacity, and sound policy-making—while accounting for the country's arid and semi-arid climate, institutional misalignment, competition over scarce water resources, the livelihood dependence of local communities on natural assets, and security and accessibility constraints. The result is a locally adapted framework in which carrying capacity is climate-sensitive, zoning is responsible and institutionally aligned, participation is livelihood-oriented and grounded in equitable benefit-sharing, and monitoring is adaptive and data-driven. Such a framework can serve as an operational model for strategic ecotourism planning, facilitating the transition from mere exploitation to sustainable conservation in Iran's sensitive ecosystems and protected areas.

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