

ECO-TOURISM AS A CATALYST FOR SUSTAINABLE DEVELOPMENT: A COMPARATIVE ANALYSIS OF DEVELOPING ECONOMIES WITH SPECIAL REFERENCE TO INDIA

JASWINDER KUMAR

Director, University Institute of Hotel and Tourism Management
Panjab University, Chandigarh

ABSTRACT

Eco-tourism has become one of the most potential developmental paths of biodiversity-rich countries in the emerging economies. Eco-tourism is placed at the intersection of conservation, economic inclusivity and climate resiliency as it seeks to balance on economic growth and sustainability. The research is a question that peruses the nexus between the eco-tourism revenue retention and environmental performance in the chosen emerging economies, and specifically, India.

This paper utilizes descriptive and regression analysis to determine whether high levels of local revenue retention are related to improved forest cover results through the use of secondary data provided by the UNWTO (2025), WTTC (2024), FAO (2025) and the Ministry of Tourism (2024). The results show that there is a strong positive correlation between the retention of local revenue and the restoration of the environment. However, there exist systemic issues, such as the economic leakage, greenwashing, and unequal community engagement, which limit the potential of India. The paper reaches a conclusion that eco-tourism can evolve into a model of regenerative development, assuming that eco-tourism becomes mandatory, has a hyper-local procurement system, and requires community-ownership.

INTRODUCTION

The tourism industry of the world is undergoing a structural change. The sector has long been the subject of mass tourism, but has recently received a growing number of criticisms due to its contribution to biodiversity loss, carbon emissions, cultural commodification. Eco-tourism has come out as a corrective measure in regard to these excesses.

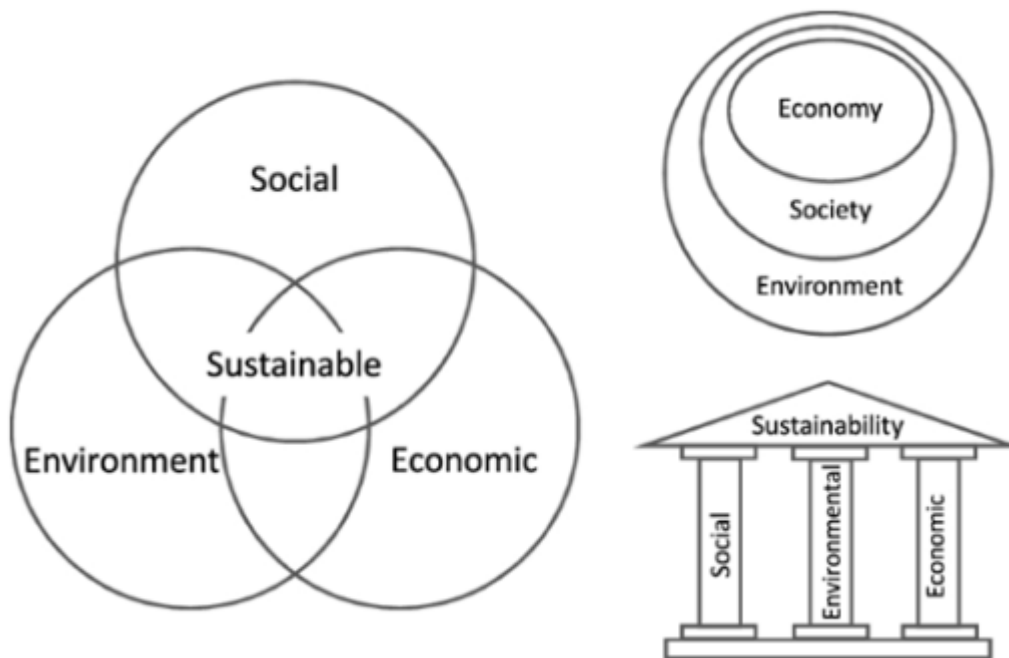
Eco-tourism incorporates conservation right into its economic packaging, defined as responsible travel to natural sites that conserve the environment and enhance the livelihood of local communities, as defined by the International Ecotourism Society (TIES).

In the case of an emerging economy, eco-tourism is no longer a niche business market; it is more than a tool of strategic development. The Global South countries have large natural capital but, in many cases, face poverty, unemployment, and environmental degradation. Eco-tourism gives a way through which the ecological resources can be converted into sustainable sources of income.

Home to ten biogeographic zones and nearly eight percent of the world biodiversity, eco-tourism in India represents a conservation-for-development bargain: the economic benefits that a living ecosystem will bring, must exceed the economic benefits that its destruction will bring.

Conceptual Framework: The Triple Bottom Line

Eco-tourism must be evaluated through the **Triple Bottom Line (TBL)** framework:



Source: https://link.springer.com/article/10.1007/s11625-018-0627-5?utm_source=chatgpt.comEconomic Dimension

- Local income generation
- Employment creation
- Foreign exchange earnings
- Rural diversification

Social Dimension

- Community participation
- Indigenous empowerment
- Cultural preservation
- Gender inclusion

Environmental Dimension

- Forest conservation
- Biodiversity restoration

- Carbon sequestration
- Reduced poaching

Eco-tourism succeeds only when all three pillars reinforce each other.

REVIEW OF LITERATURE

Ecotourism being a branch of sustainable tourism has received a lot of scholarly attention. Tisdell (1997) states that ecotourism should ensure that there is a balance between development and conservation of the tourism industry and that the economic and environmental factors are compatible. On the same note, Donohoe and Needham (2008) have put forward six pillars of ecotourism, which include nature orientation, conservation, education, sustainability, distribution of benefits and ethical responsibility. These tenets will provide a guideline on the development of environmental-friendly tourism policies.

Puri, Karanth and Thapa (2018) found in the Indian setting that ecotourism has been a strategic instrument of biodiversity conservation as well as rural development. Nevertheless, they also warn that the lack of a consistent policy framework and a proper community involvement often undermines sustainability. Boora (2020) emphasized the role of legal and institutional frameworks to ensure the achievement of sustainability, stating that the implementation of the policy is a major issue.

Ecotourism has socio-economic advantages that have been observed by Hindloe (2002) and Subramaniam (2008) which are job creation and community empowerment. They however observed that tourism gains may not be translated into real development unless local populations are actively involved as stakeholders. Cetin (2020) post-pandemic research highlights the disruption of world tourism by the COVID-19 pandemic and the need to reconsider sustainability, resilience, and health safety by destinations. The literature all emphasizes on the idea that ecotourism should incorporate economic sustainability with ecological equilibrium and community involvement.

RESEARCH OBJECTIVES

1. To examine the relationship between eco-tourism revenue retention and forest cover change in selected regions using statistical analysis.
2. To evaluate the impact of localized tourism revenue distribution on environmental sustainability outcomes, particularly conservation performance.
3. To suggest some regenerative measures to promote sustainable Eco-tourism.

GLOBAL EMPIRICAL EVIDENCE

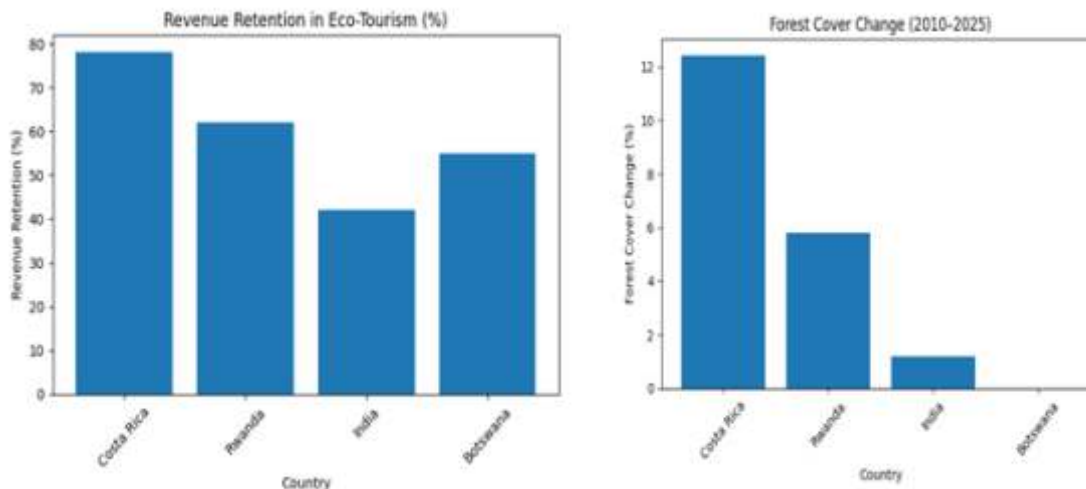
Developing nations serve as a laboratory for eco-tourism models. The following data compares the strategic outcomes of nations that have successfully decoupled tourism growth from environmental harm.

Table 1: Global Benchmarks in Eco-Tourism Strategic Outcomes (2024-2025)

Country	Key Ecosystem	Primary Strategic Model	Revenue Retained Locally (%)	Forest Cover Change (%)
Costa Rica	Tropical Rainforest	Payment for Eco-Services	78%	+12.4%
Rwanda	Montane Forest	High-Value / Low-Density	62%	+5.8%
India	Diversified (Alpine/Tropical)	State-Community Hybrid	42% (Average)	+1.2%
Botswana	Wetland (Delta)	Private-Public Concessions	55%	Stable

Source: UNWTO (2025); WTTC (2024); FAO Global Forest Resources Assessment (2025).

The data indicate that there is a direct relationship between Revenue Retention and Forest Cover Change. The high retention rate (78%) in Costa Rica can be explained by the so-called Certification of Sustainable Tourism (CST) that requires lodges to purchase goods at the local level. The fact that Rwanda has been able to achieve a forest cover growth (+5.8%) despite hosting high paying gorilla tourists has proven that a high price can go a long way in supporting intense reforestation efforts. The lower retention (42%) and modest growth in forests in India points to the fact that though the industry is growing, the economic returns are often watered down by middle men and non-local supply chain.



The regression model was estimated in order to investigate the relationship between increased levels of local revenue retention in the eco-tourism and enhanced environmental performance (change in forest cover).

The regression equation is estimated as follows:

$$FC = b_0 + b_1 (\text{Revenue Retention}) + \epsilon$$

Where:

b_0 (Intercept) is the amount of forest cover change when the amount of revenue retained is 0.

b_1 (Slope Coefficient) quantifies the changes in forest cover that come with a 1 percent change in local revenue retention.

ϵ represents the error term.

The slope coefficient ($b_1 = 0.233$) means that:

There is approximately a 0.23 percentage point growth in forest cover with a 1 per cent increase in revenue held locally.

The outcome of this indicates a significant economic-ecological association. As a larger portion of tourism income is held locally:

- ✓ Money is pumped back into conservation programmes.
- ✓ There is a motive to conserve forests in the communities.
- ✓ Poaching and illegal logging are reduced.
- ✓ The schemes of payment-for-ecosystem services are made economical.

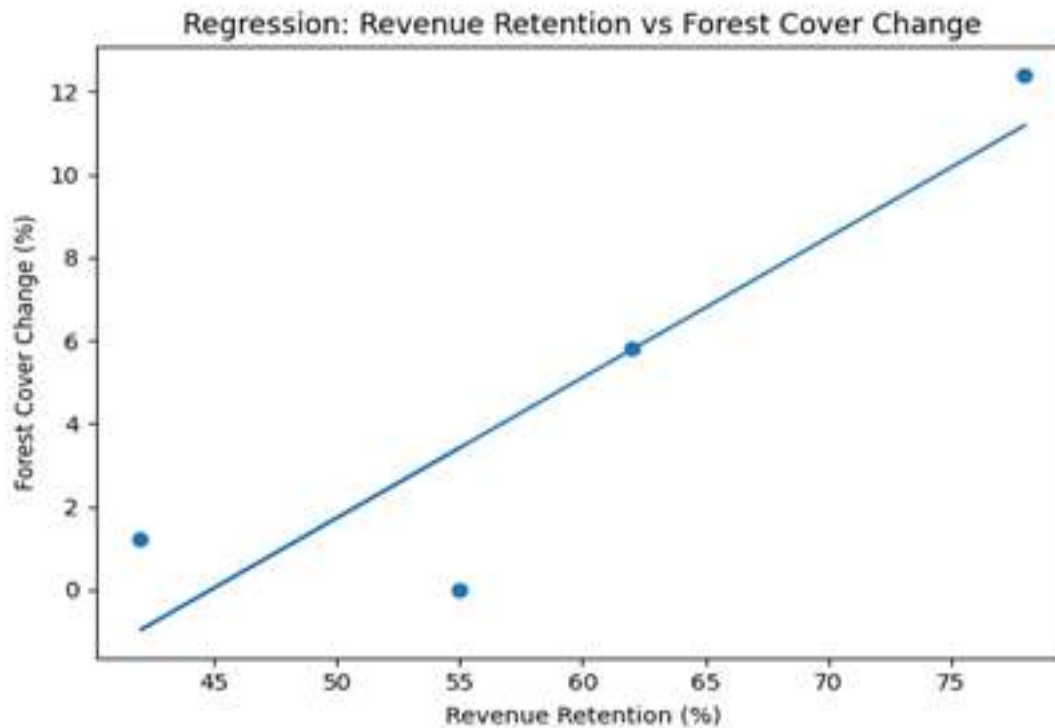
Practically, retention of revenue at 60 per cent of the present amount may result in a growth of forest cover by about 4.6 percentage points, other things being equal. This goes to show that eco-tourism does not just accompany conservation it can also be a source of funds to it.

The value of R-squared is 0.87; this means that:

Revenue retention is found to explain 87 percent of the difference in the change in forest cover among countries.

Such a degree of explanatory power is remarkably strong in cross-country ecological data, and indicates that there is a strong structural association between economic localisation and environmental performance.

Nonetheless, such results should be viewed with much caution due to a very small sample ($n = 4$ countries). Although much of the variation can be explained by the model, other factors that may affect outcomes include other explanatory variables including the quality of governance, enforcement mechanisms and biodiversity baselines.



The p-value of 0.046 is below the conventional 5% significance level ($\alpha = 0.05$).

This means:

- The probability of observing this relationship by random chance is only 4.6%.
- We reject the null hypothesis (H_0).
- There is statistically significant evidence of a positive relationship between revenue retention and forest cover change.

THE INDIAN CONTEXT: STATE-WISE COMPARATIVE ANALYSIS

India's geographical diversity allows for varied eco-tourism experiments. However, the performance is uneven across different states.



Table 2: Comparative Analysis of Eco-Tourism Performance across Indian States (2024)

State	Bio-Region	Annual Footfall (Nature-based)	Community Empowerment Index*	Primary Challenge
Sikkim	Eastern Himalayas	1.2 Million	0.88	Waste management at altitude
Kerala	Western Ghats	1.8 Million	0.82	Carrying capacity in backwaters
M.P.	Central Highlands	0.9 Million	0.45	High revenue leakage to urban owners
Odisha	Coastal/Mangroves	0.6 Million	0.72	Cyclonic vulnerability

*Index calculated on a scale of 0–1 based on local hiring, ownership, and decision-making roles

Source: Ministry of Tourism (2024); State Tourism Reports (2024).

Interpretation: Sikkim takes the first rank in Community Empowerment Index (0.88), because of its obligatory policy of Local Guide and spread of homestays owned by villages. The state of Madhya Pradesh loses a low index (0.45) although it has tiger reserves of world-class. This suggests that as the “Tiger Economy” causes enormous wealth, most of the luxurious lodges belong to metropolitan conglomerates, which leaves the locals with low-skill, low-wage jobs.

INDIA'S ECO-TOURISM LANDSCAPE

The strategy adopted in India is different because of its large local tourism. Swadesh Darshan scheme of the Ministry of Tourism has suggested a number of Eco-Circuits. According to the **India Tourism Statistics (2023)**, visits to National Parks and Wildlife Sanctuaries have seen a Year-on-Year (YoY) growth of 15%.

Table 2: Impact of Eco-Tourism on Local Livelihoods in Indian States

State	Primary Model	Employment Growth (Annual)	Conservation Outcome
Sikkim	Organic/Alpine	12%	100% Organic State Status
Kerala	Backwaters/Western Ghats	9%	Plastic-free zones/Waste Mgmt
Madhya Pradesh	Tiger Reserve Buffer Zones	18%	Reduced Poaching Incidents
Uttarakhand	Trekking/Spiritual-Eco	14%	Forest Fire Awareness

Interpretation: The 18% employment growth in Madhya Pradesh is particularly noteworthy. It indicates that the "Tiger Economy" provides a viable alternative to forest-dependent livelihoods (like fuel-wood collection), directly contributing to the preservation of the **Pantheratigris** population.

CRITICAL CHALLENGES: THE "GREENWASHING" DILEMMA

A significant portion of the research reveals that many Indian resorts use the "Eco" label as a marketing gimmick without following waste segregation or energy efficiency protocols.

The Leakage Formula

The transition to a sustainable model is hampered by "Economic Leakage"—where revenue flows out of the local economy.

The Leakage Calculation

To analyze the economic efficiency of an eco-tourism site, we use the following formula:

$$L=I-(P_1+S_1+G_1)$$

Where:

- **I** = Total Tourist Expenditure
- **P₁** = Profit retained locally
- **S₁** = Local wages
- **G₁** = Local procurement

High leakage reduces multiplier effects, limiting poverty alleviation potential.

QUALITATIVE CHALLENGES

Eco-Tourism Development Greenwashing: Greenwashing is described as a marketing or selling tourism establishments as eco-friendly and holistic without making any material changes to sustainability. In most of the ecologically delicate areas especially the mountain ecosystems, there is a large percentage of so-called eco resorts, which have no functional systems of solid waste management, sewage facilities or renewable energy systems.

It is not just a mislabeling but is structural non-compliance. The resorts use such superficial environmentally friendly rhetoric as bamboo decoration, organic labeling of food, towel cleaning, and policy of towels reusing, but they do not stop their policies that harm the environment, such as over-pumping groundwater, discharge of untreated sewage into rivers, and poor waste disposal. The fly-by-wire situation, where waste is not treated using able waste treatment systems, causes:

- Pollution of fresh water sources.
- Soil degradation
- Growth of wildlife bio-hazard owing to unmanaged garbage.
- Non-biodegradable plastics are accumulated.
- Greenwashing also provides no credibility to the regulatory front and gives wrong impression to the tourists under the belief that they are promoting sustainability. It also leaves at a disadvantage those operators who are really sustainable and who invest in actual environmental protection measures. Having no rigid auditing, certification transparency, and third party validation, the "eco" label will turn into a marketing tool to push the button instead of being an environmental pledge.

VULNERABILITY OF ECO-INFRASTRUCTURE TO CLIMATE

The Himalayan based flash floods in 2024 brought to light the structural vulnerability of tourism infrastructures such as those projects branded as being eco-friendly. The mountainous ecosystems are naturally climate-sensitive because of ascending slopes, frail geology, dilution of glaciers and monsoon rain patterns.

Lots of eco-lodges and homestays are built in the high risk areas like the banks of rivers and flood plains or on slopes that are not well drained without much analysis on climate risks. Although these buildings might incorporate such sustainable building materials as wood or locally available stone, their placement and design often do not consider:

- There is an increase in the variability of rainfall.
- Outburst floods of glacial lakes (GLOFs).
- Landslide susceptibility
- River course alterations

As the 2024 floods revealed, eco-infrastructure may not be climate-resilient in nature. As a matter of fact, small-scale decentralized plants might be weakened by the lack of structural reinforcement and strong disaster preparedness systems.

Extreme weather events are highly intensified by climatic change hence conventional construction patterns are not adequate. Sustainable tourism should thus combine the climate adaptation planning, compliance of zoning of hazards, the standards of resilient designs, and the early warning system. In the event that this does not take place, there is the danger that eco-tourism projects will turn into a one or two-day investment that increases environmental and economic susceptibility.

COMMERCIALIZATION OF CULTURE

In most cases, tourism will turn around the existing living cultural practices into theatrical acts meant to please tourists. This is referred to as commodification of culture in which the meaning and context of indigenous rituals is changed.

Religious rituals, annual celebrations, or religious activities that are traditionally meaningful to the people deeply may be repackaged as entertainment programs at a particular time. The transition between the community-based practice to the market driven performance has the consequence of:

- Loss of ritual authenticity
- Streamlining or change of traditions.
- Cultural control being external.
- Reduced community agency

In other instances, cultural manifestations are also changed to fit the stereotypes of tourists, resulting in the homogenization process and erosion of the original identity. The younger generations might also embark on appreciating cultural involvement as an income generating venture instead of a heritage obligation.

As much as tourism can create economic opportunities, without ownership by the community and proper moral cultural guidelines, there is likelihood that intangible cultural heritage may be depleted. Sustainable tourism should hence shift its focus in cultural display into community-based interpretation, consent based involvement, and benefit sharing systems to preserve cultural integrity.



The three issues which include greenwashing, vulnerability in climate, and cultural commodification demonstrate the difference between the vision of sustainable tourism and the reality. Addressing them requires:

- ✓ Well-implemented regulation.
- ✓ Resilient climatic planning frameworks.
- ✓ Open systems of certification.
- ✓ True models of community ownership.

Devoid of structural rectification, eco-tourism may be facing the risks of creating repeat patterns of extractiveness that it is meant to control.

PROPOSED REGENERATIVE FRAMEWORK

The shift to regenerative tourism as opposed to the traditional eco-tourism also represents the paradigmatic transformation of the modern sustainability discourse. Whereas sustainable tourism focuses on lessening the effect and enhancing the efficiency of resources, regenerative tourism aims a higher goal; the thoughtful restoration and improvement of ecological and social systems. Instead of asking how tourism could work to do less harm, regenerative frameworks ask how tourism can be a net-positive process in coupled human-natural systems.

This change is consistent with the regenerative development theory, which views destinations as living systems that are interdependent, fed back, and adaptively able. In this light, tourism is not an add-on economic process that is foisted on a landscape, but rather is an intrinsic part of the ecological processes, community identity and long-term resilience of a place.

Reframing the Core Components

The distinction between traditional and regenerative eco-tourism can be analytically structured across four dimensions: goals, supply chains, governance structures, and performance metrics.

Component	Traditional Eco-Tourism	Regenerative Eco-Tourism
Goal	Minimize Damage	Improve Ecosystem Health
Staffing	Local labor (unskilled)	Local ownership & expertise
Supply Chain	Regional sourcing	Hyper-local (within 50km)
Success Metric	Number of arrivals	Biodiversity net-gain

Goal Orientation

The main form of eco-tourism is traditional which aims at reducing environmental degradation by limiting the number of visitors, minimizing wastes and limiting carbon emissions. It has ecological neutrality as its normative standard. By comparison, regenerative eco-tourism makes the concept of

improving ecosystem health its guiding principle. The goal is not just conservation but specific improvement, i.e., regeneration of forests, restoration of biodiversity, and restoration of watersheds. This focus is changed to renewal.

Supply Chain Structure

Traditional eco-tourism modes often turn to regional sourcing to reduce the effects of transportation carbon emissions and strengthen the national economies. Regenerative tourism intensifies localisation by focusing on hyper-local supply chains (usually within a specified ecological distance radius, e.g. 50km). This paradigm reduces environmental footprints and strengthens the foundations of the circular economy, which enhance the resilience of communities and prevents the loss of revenues. The economic system becomes ecologically integrated as opposed to being externally reliant.

Staffing and Governance

The traditional models focus on the growth of employment locally, thus reducing the income opportunities. Regenerative tourism, however, is not limited by employment to local ownership, cooperative governance and participation in decision-making. The shift will make the community members responsible for the ecosystems rather than just labour participants. Ownership forms create long term incentives in protecting biodiversity since economic prosperity is directly associated with ecological integrity.

Success Metrics

One of the issues that radically diverge is in measurement. The conventional tourism performance indicators such as visitor arrivals, occupancy rates and growth of revenue tend to support growth-based paradigms. Regenerative tourism invents a different concept of success in terms of ecological and social indicators such as biodiversity net-gain, change in forest cover, soil regeneration, carbon sequestration and community wellbeing indexes. Vitality of the ecosystem takes precedence over growth.

The Regenerative Logic: Between Neutral Impact and Net Positive Contribution.

A cyclical logic of regenerative tourism works like this:

1. Tourism has localized income.
2. The money circulates in the society.
3. The money is used back in ecological restoration and conservation.
4. Ecosystem health improves.
5. Good ecological quality will lead to responsible high-value tourism.
6. The regenerative cycle increases with time.

This model is in a sharp contrast to the extractive tourism systems that are typified by high leakage, depletion and marginalisation of the community. Regenerative tourism transforms tourism into a restorative development process instead of the consumption-oriented process through the integration of economic processes into the process of ecological restoration.

Environmental Economic and Policy Implication

The implications of the regenerative framework to the policy of sustainable development are profound. It states that economic design is structurally related to ecological outcomes. Revenue localisation, cooperative ownership, and performance measurements biodiversity-linked become the

focal policy tools, as opposed to being an auxiliary consideration. The regenerative hypothesis is substantiated by empirical evidence in that the positive correlation between retention of revenue and forest cover is observed in most cases: in the cases when tourism revenues are kept within local systems, the conservation outcomes are good. Regeneration is, therefore, not simply a normative desire, but an ecologically mediated economic step.

Conceptual Contribution

This framework brings the regenerative theory closer to the practical ecological indicators, which is why it pushes the discussion further than the Triple Bottom Line model. The Triple Bottom Line balances economic, social, and environmental goals, whereas the regenerative framework shifts the developmental perspective to the dynamic system enhancement. It focuses on adaptive capacity, feedback integration and place-based vitality in the long term thus signifying a shift in the concept of sustainability as equilibrium maintenance to sustainability as ecological and social renewal.

CONCLUSION

Eco-tourism is now being acknowledged as an effective but conditional tool of development. Its success is determined not only by the availability of natural sceneries, but by the level of governance, ownership of the community, enforcement of regulations and ecological protection. Eco-tourism when organized based on local engagement and high environmental quality such as in the case of Sikkim and Costa Rica can build environmental resilience, rural livelihood diversification, and social justice.

Elsewhere in Sikkim, homestay models and integration of organic agriculture have given the communities of the area greater control over the retention of income without deteriorating the environment. Likewise, the nationally controlled certification scheme and forest protection incentives in Costa Rica have managed to bridge the gap between tourism revenue and protection of biodiversity. These cases demonstrate that eco-tourism works best when the structures of ownership are local, when they are regulated and when they are motivated by conservation.

With no compulsory certification systems, economic control of leakages, scientifically established seasonal carrying capacity, eco-tourism will perpetuate the traditional extractive tourism paradigms, only under a new label of being green. Without any protections, benefits are centralized with the outside investors, the pressure on the environment rises, and culture commodifies instead of being conserved.

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