



Review

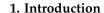
# Indigenous Forestry Tourism Dimensions: A Systematic Review

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Abstract: Tourism activities developed in forested areas are a non-wood forest exploitation method that contributes to sustainability objectives, even more so when they consider the participation of the community and the government in favor of its conservation. Under this context, this article will review the different investigations that relate to indigenous tourism, the conservation of the ecosystem and what attributes are important when measuring them. To do this, a scientometric meta-analysis was carried out, which extracts a set of articles that strictly refer to the themes of indigenous tourism in forests, considering two databases integrated into the Core Collection Web of Science, the selection process of which is aligned with the guidelines of the PRISMA methodology, establishing, with the PICOS tool, the eligibility criteria of the articles, which were applied to a qualitative systematic review. Finally, a model for measuring attributes in levels on indigenous tourism stands out, which incorporates the limit between the number of visitors to the tourist destination; the incorporation of tourists guides the identification of the necessary infrastructure facilities for an adequate experience and environmental conservation.

**Keywords:** tourism; non-wood forest; ethnic; indigenous; environmental; indigenous tourism; local development



At present, the benefits that forest ecosystems bring to communities stand out, both through the sustainable exploitation of the products of origin and in the improvement of recreational, tourist and scenic services offered by visiting these places, which are defined as non-wood forest products and services [1–3].

Therefore, the purpose of this article is to systematically review the state of the art on research currents and advances in the services, promotion, conservation, and policies of indigenous forestry tourism, and to mention the main challenges that contribute to new lines of research. For this aim, a scientometric meta-analysis is proposed, which extracts a set of articles that refer strictly to the topic of indigenous tourism in forests, considering two databases integrated in the Core Collection Web of Science, whose selection process is aligned with the guidelines of the PRISMA methodology, establishing, with the PICOS tool, the eligibility criteria of the articles, to which a qualitative meta-analysis is applied.



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#### 1.1. Non-Wood Forest

Mitigating the effects of climate change (SDG 13) has generated social and economic interest in non-wood forests (SDG 15), as they provide environmentally sustainable products and services [2,4,5].

The characteristics of these places are their biodiversity, potential for tourism development and forestry recreation, ancestral and sacred cosmovision, carbon mitigation, supply of different fruits of the forest, generation of non-exploited wood and non-wood crafts and provision of social services such as recreation, tourism, hunting and gastronomic industries [6–8].

The factors that promote its development are the local demographics, forest heritage, skills, and regional cultural values. It is a framework for action for those ventures that seek to improve the experiences of local consumers and the recreational places for tourists [1,9–11].

From a governmental point of view, there is a need to encourage and support local businesses, forest management and planning, and to promote landscapes and the conservation of forest ecosystems and biodiversity, the interface between science and vital policy at various scales, the sustainable protection of landscape heritage, innovative policies, and creative approaches to enhance this kind of market [3,9].

## 1.2. Indigenous Tourism, Ecotourism and Forestry

Indigenous tourism is an activity that is developing and expanding globally in all latitudes with complex nature and characteristics, and with lines of research that incorporate the sustainable conservation of culture, environment, and local traditions [12–19]. Some studies have pointed out the importance of considering the characteristics of each community in the diverse external tourism interventions, respecting the particularities of each group, their cosmovision and connection with nature, trying to integrate their cosmologies and complementing them with the practices of modern organizations [13,20–22]. The indigenous peoples involved with the interventions of organizations that seek to commercially exploit tourist destinations are confronted with changes and forces of the environment, trying to find a balance of benefits between external actors and the indigenous communities, in a constant search for the greater well-being of the communities while respecting their traditions [23].

Indigenous communities that maintain the characteristics of their ancestral cultures are the most attractive to tourists seeking exotic destinations, and it is where indigenous communities acquire commercial practices such as sales of handicrafts, own tourism agencies and authorized tour guides [14,15]. One way to better deal with this intervention of external organizations is the so-called community-based ecotourism (CBE), which promotes a sustainable way of financing intervention and conservation activities, thereby contributing to the well-being of the communities [24]. This method contemplates a great environmental awareness, with forests, forestation and the environment being a fundamental and recognized pillar of ecotourism practices [25–28]. Within the diversity of the ecosystem, national parks, and nature sanctuaries, protected trails, native forest conservation, wetlands and ecotourism enterprises operated by indigenous people are considered as main factors of an adequate balance for the conservation of communities and the adequate management of sustainable forestry [16].

Ecotourism is a connection between biodiversity, conservation and community development that allows a mixed use of the territory, generating a sustainable social organization over time, where we can highlight examples such as the Mapu Lahual Indigenous Parks Network in Chile or the Naha Flora and Fauna Protected Natural Area in Mexico. Their practices include the advancement of parks, campsites and local services, cultural activities, hunting and grazing, among others. For this, it is essential that the government recognizes and identifies the most appropriate strategies, including mediation and standards at the local level, collaboration, and adaptive management with local communities [17,22].

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On the other hand, one of the important factors that emerge to create awareness and maintain an adequate conservation vision with the communities and the environment is the educational component of ecotourism, although it still does not have importance with respect to other components, such as economic, social, and environmental [15]. This is the case of Timburi Cocha Biological Station (TCBS), which, once deployed in the territory and having carried out scientific work, measured the impact of its relationship with the local community and recognized its contribution to eight SDGs (Sustainability Development Goals) and an adequate respect for their traditions, culture, and values [21]. There are many territories that have generated a development pole for indigenous communities, economically supporting the well-being of the community and its ecological conservation and being very well perceived by its inhabitants. Among these cases, we can highlight the Yucatan Peninsula, where tourism development is the main agent of social, economic and ecological changes in the region [20].

## 1.3. Conservation, Cosmo-Culturaland Scientific Knowledge for Environmental Protection

Ecosystem conservation contributes to the protection of biological diversity and climate mitigation [29]. Thus, in the case of tropical forest care, it has a positive effect on deforestation and forest degradation [30]. It also provides additional benefits to combat poverty and social marginalization through economic projects, with the participation of the local community in initiatives such as ecotourism, generating better forest management and the conservation of indigenous resources, providing sustainable income for basic household needs [31–34].

It is important to consider, in conservation plans, the cosmo-cultural knowledge of the population for the protection of forests and wildlife, since it maintains the heritage between the local population and nature, which helps in decision making, resource management, biodiversity preservation, ethnobotanical best practices and the prioritization of land use needs [29,35,36]. It is essential to recognize that this knowledge contributes to the management of socio-ecological systems, incorporating the unique components that each territory possesses [37,38].

Therefore, a combination of indigenous and scientific knowledge would strengthen the heritage and innovation for effective biodiversity protection [35]. For example, the use of spatial patterns, land management, mapping and Geographic Information System (GIS)-based analysis facilitates the identification of priority protection areas from such illegal activity or poaching, contributes to fostering ecological sustainability, provides guidance for developing specific forest management strategies and supports monitoring for forest degradation and cultural diversity [30,36,39–42].

Finally, centralized governance and conservation policies of protected areas without consideration of the people and their ecosystem has produced adverse effects on both livelihoods, including crop losses, poor management of weeds in forests and recreational plots with recreational impacts causing no anthropization of forest vegetation in these protected areas, generating a loss of economic benefits from agriculture and forest products [31,43,44].

## 2. Materials and Methods

In the review presented, the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines [45] were used, and the PICOS (Population, Interventions, Comparators, Outcomes and Study) tool was used to establish the eligibility criteria for the articles [46,47], for which the publication by Sundara et al. [48] on the evaluation of Urban Forest Research in Malaysia was used as a methodological reference for thematic proximity. Initial article search was reinforced with the use of scientometrics [49], recently used in article-related topics [50–52]. The use of scientometrics in a meta-analysis [53] focuses on knowledge production, the spatiality of knowledge production and knowledge relationships within the global actor-network [54,55], allowing refining the initial article selection based on a search vector using field labels and Boolean and wildcard opera-

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tors [56]. Its incorporation of sequential mixed usage with PRISMA guidelines has also been previously addressed [57–59].

The articles with the search vector TS = (Tour\* AND Forest\* AND indigenous) were identified using 2 databases of the Web of Science Core Collection (WoS): Science Citation Index Expanded (SCIE), and Social Sciences Citation Index (SSCI), both containing journals indexed in the WoS Journal Citation Report (JCR), which are considered high-quality journals for which impact is calculated annually based on the average number of citations received. With respect to Scopus, the journals indexed in SSCI-WoS have high duplicity of indexing. By using PRISMA, the selection of articles was specified based on eligibility criteria: the target population, the interventions in this population, the elements of comparison of these studies, the outcomes to which these studies are oriented and the study designs (a set of criteria called the PICOS tool, as shown in Table 1). Finally, the selected studies were classified according to the emerging dimensions into services, promotion, conservation, and policies.

Table 1. Eligibility criteria (PICOS (Population, Interventions, Comparators, Outcomes, and Study)).

PICOS	PICOS Description		
Population	Forest locations where tourism is developed.		
Interventions	Sustainable aspects linked to tourism in forests are measured.		
Comparator	Tourism sustainability indicators in forests.		
_	Indigenous tourism cases in forest territories, considering		
Outcomes	attributes or levels of quantitative results, with a methodology		
	that allows replication and systematization of the information		
Study designs	Quantitative, qualitative, and mixed study types will be included.		

### 3. Results

The scientometric search of articles identified a total of 99 articles from two different databases of the Web of Science Core Collection (SSCI and SCIE). There were 76 unique titles and abstracts (no repeats) but excluding articles with no linkage to indigenous tourism reduced this to 19 full-text articles retrieved and screened using the selection criteria defined with the PICOS tool (See Appendix A). The screening thus identified eight articles that met our inclusion criteria, shown in Figure 1.

## 3.1. Qualitative Review Analysis

The eleven articles that met the eligibility criteria were reviewed at the full-text level to determine, with precision, if their characteristics offered homogeneous criteria that made them comparable. Table 2 shows the main identification and retrieval information obtained from the WoS databases.

**Table 2.** Articles included in the qualitative review analysis.

First Author	Journal	Publ. Year	Affiliation Author	Methodology	WoS: Category	Dimensions
Stork, N.E., et al. [28]	J. Rural Stud.	2014	Griffith Univ. (AU), James Cook Univ. (AU), CSIRO Ecosyst Sci. (AU)	Qualitative	Geography; Regional & Urban Planning	Conservation, Governmental
Chiawo, D.O., et al. [60]	Afr. J. Ecol.	2018	Strathmore Univ. (KE), Kenya Forest Serv. (KE), Rhodes Univ. (ZA)	Quantitative	Ecology	Conservation, Governmental
Chen, H.S. [61]	Int. J. Environ. Res. Public Health	2019	Chung Shan Med Univ. (TW)	Quantitative	Environmental Sciences; Public, Environmental & Occupational Health	Services and promotion; Conservation

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Table 2. Cont.

First Author	Journal	Publ. Year	Affiliation Author	Methodology	WoS: Category	Dimensions
Karst, H. [13]	J. Sustain. Tour.	2017	Waterloo Univ. (ON), Canada.	Qualitative	Green & Sustainable Science & Technology; Hospitality, Leisure, Sport & Tourism	Conservation
Rokpelnis, K., et al. [34]	Sustainability	2018	Tsinghua Univ (Ho), London Sch Econ, (U.K)	Qualitative	Green & Sustainable Science & Technology; Environmental Sciences; Environmental Studies	Conservation, Governmental
Martin, A., et al. [31]	Conserv. Soc.	2015	E Anglia Univ. (U.K)	Qualitative	Biodiversity Conservation; Environmental Studies	Services and promotion; Conservation
De Zoysa, M. [16]	J. Sustain. For.	2021	Ruhuna Univ. (SL)	Qualitative	Forestry	Services and promotion; Conservation, Governmental
Dangi, M.B., et al. [41]	Environ. Dev.	2018	California State Univ (USA), Tribhuvan Univ (Nepal), Wyoming Univ, (USA), Zayed Univ, (UAE)	Qualitative	Environmental Sciences	Conservation, Governmental
Garcia- Frapolli, E.; [20]	Ecol. Soc.	2008	Nacl Autonoma Mexico Univ, (M).	Qualitative	Ecology; Environmental Studies	Services and promotion
Arevalo- Valenzuela, P., et al. [37]	Ocean Coastal Manage.	2021	Catolica Temuco Univ, (CL)	Qualitative	Oceanography; Water Resources	Conservation, Governmental

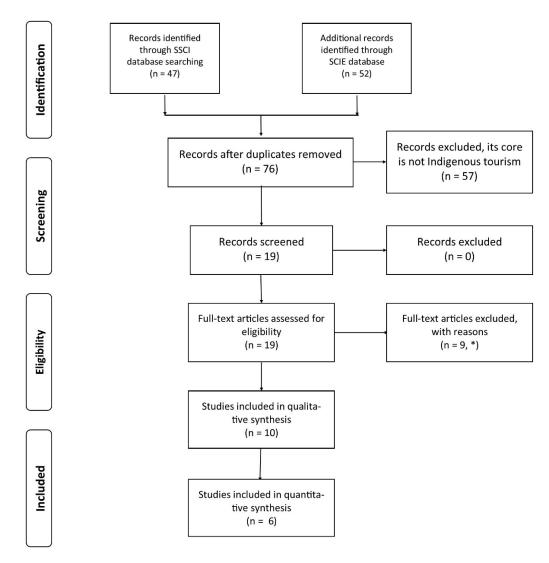
In terms of thematic coverage, Table 2, below, shows that the eleven articles are mainly associated with the environmental issues in the WoS categories: Ecology, Environmental Sciences/Studies and Geography. However, the main difference is the methodology used in the different articles and the dimensions covered by their studies. Thus, the set of six articles to be reviewed in quantitative terms consisted of Chiawo et al. [60], Chen et al. [61], Karst, H. [13], Martin, A. et al. [31], De Zoysa, M. [16] and Dangi, M.B. et al. [41].

## 3.2. Quantitative Review Analysis

The set of selected articles was valued according to the breadth of topics on environmental sustainability and non-wood forest.

As for these two authors, in Table 3, they use a quantitative methodology. Their indicators coincide in the conservation dimension focused on the family component and its roots and management for ecosystem conservation. They differ in the governmental dimension, Chiawo, D.O. et al. [60], and service and promotion dimension Chen, H.S. [61].

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**Figure 1.** Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) analysis flow. \* The exclusions correspond to articles that referred to indigenous and non-indigenous species (flora or fauna) that are part of the forest tourism heritage, but for which there are no indigenous ethnic communities.

**Table 3.** Included quantitative articles for the review analysis.

Comparative Items	Chiawo, D.O. et al. [60]	Chen, H.S. [61]
Journal	Afr. J. Ecol.	Int. J. Environ. Res. Public Health
Locality	Arabuko Sokoke Forest	Orchid Island
Country	Kenya	Taiwan
Number variables	4	5
Type variables	Scalar	Ordinal
Method	Parametric	Analytic
Sample (n)	109	385
Services and promotion	No	Limit on the number of visitors; Tour guides; Recreation and facilities
Conservation	Family size; Farm size (acres)	Experience activities; Ecosystem conservation trust fund
Governmental	Estimated economic benefit from the forest (KES/month); Estimated income (KES/month)	

In Table 4, all the articles used qualitative methodologies, mainly through surveys, and only one of them did not show the question items.

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Table 4. Included qualitative articles for the review analysis.

Comparative Items	Karst, H. [13]	Martin, A. et al. [31]	De Zoysa, M. [16]	Dangi, M.B. et al. [41]
Journal	J. Sustain. Tour.	Conserv. Soc.	J. Sustain. For.	Environ. Dev.
•	Sakteng Wildlife	Bwindi Impenetrable	Forest-Based Ecotourism	Annapurna
Locality	Sanctuary	National Park	in Sri Lanka	Conservation Area
Country	Bhutan	Uganda	Sri Lanka	Nepal
Features	3	4	4	$\overline{1}$
Questions items	17	Not present	7	33
Method	Study approach	Expert panel—household survey	Reviewed related global literature	Survey, focus groups
Sample (n)	63	146	Not present	64
Conservation	Human relations; Human–nature relations; Culture and spirituality	Household experience of conservation; Culture and spirituality	Responsible travel to natural and cultural areas; Tourism activities should be nature-based; Environmental education and supports conservation	Factors affecting environmental change; Implications of traditional practices on environment
Services and promotion		Tourism operations	Responsible travel to natural and cultural areas; Tourists to live with nature and local people and to understand the nature and local socio-cultural wealth; Multiple responsible traveling and hospitality activities that involve villagers, visitors, facilitators, and others as a group work.	
Governmental		Tourism industry	Protect resources and to eradicate the people's poverty; Conserves the environment and sustains the well-being of local people	Effects of economic development, construction and expansion of roads, and tourism activities on livelihood

As for the studies conducted, all of them considered the conservation dimension associated with the cultural implications of people. Three considered the governmental policies associated with tourism development and only two considered the service and promotion of tourism in operational issues.

#### 4. Discussion

When reviewing the advances in non-wood forest studies concerning the research carried out, we consider that cultural and community aspects have not been considered at the time of scaling and implementing government policies for the development of the local sector. In addition, although the use of innovation tools is mentioned as a differentiating aspect, the relationship between academia and the private world to finance and opt for other paths that allow the advancement of the society is not mentioned either, when compared with the studies [1].

One of the aspects that we consider relevant to highlight in this research is the importance of having a verifiable methodology to evaluate and identify the category and factors that enhance the tourist experience in an integrated manner with protected environmental conservation areas and indigenous communities, as indicated in the study by Han-Shen Chen [61]. This methodology, proposed by the researcher, allows considering relevant aspects between local interests, development and the conservation of space, mea-

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suring attributes such as: the limit of the number of visitors to the tourist destination; the incorporation of tourist guides with knowledge of the sector, to generate a better user experience and cultural and environmental care; the identification of the infrastructure facilities necessary for an adequate tourist experience and environmental conservation; the contextualization of the different activities of the indigenous peoples, respecting their culture and cosmovision; and to promote the care of the entire ecological ecosystem.

Although within the literature on indigenous tourism we find some approaches to systematize the attributes and levels that allow measuring an adequate tourism experience, these do not consider the integration of attributes as a relevant aspect and generally use more comprehensive and descriptive methodologies. For example, in Wierucka's research [14], there is an approach to the identification of factors that enhances indigenous tourism, highlighting the local tourist guides and, in an uncertain way, the experiences of commercial activities by the local inhabitants, but not incorporating in an integral way the dimensions of recreational facilities or the limitation of visitor numbers. On the other hand, the research proposed by Karst, H. [13] only manages to make a classification in human relations, human–nature relations and culture and spirituality, but without the depth of integral analysis in the various dimensions mentioned. Another consideration has to do with the evaluation in the governmental and conservation categories around sustainable forest use and resource generation but does not consider aspects of forest ecotourism in the research of Dangi, M.B., et al. [41].

Another study that we consider noteworthy is the one carried out by De Zoysa [16] and Martin, A. et al. [31], which focuses on highlighting the importance of the development of natural, physical, social, financial, and human capital in indigenous tourism destination areas, describing the case of Sri Lanka and Uganda, but not developing a proposal for comprehensive measurement that allows a contrastable and replicable methodology.

They also add that in the absence of adequate integration strategies for tourist destinations in areas with indigenous communities that are also considered environmental protection zones, many times people are physically moved to other unprotected areas, and, in other cases, the communities continue to live within the protected areas due to the inability of the state to evict them, producing negative externalities in this type of situation.

### 5. Conclusions

Although there is a high level of interest on the part of researchers to continue deepening community development, the relationship with the territory and the conservation of the environment through non-wood forests is a field that shows several lines of action to be advanced. It is vitally important that progress be made between the state, private enterprise, academy, and the members of the local communities when defining mechanisms to project sustainable development, considering the different interests of the actors that make up each of these systems.

Integrating categories and factors that measure the interests of the inhabitants within non-wood forest areas, the community, the government, and the private sector is of vital importance to measure the impact of the proposed actions. These actions must also be accompanied by controls that evaluate the degree of consumer experience in both the products of origin and the service provided, which will complement the basic guidelines that governments must consider when projecting environmental care and compliance with the proposed SDGs.

Future lines of research are related to the study of other indigenous communities (living heritage) that inhabit forests and the design of new quantitative and qualitative instruments considering the implementation of ordinal scales in each of these categories; in addition, to evaluate their feasibility of use in studies of multiple use strategies in the agricultural, forestry and heritage sectors.

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## Appendix A

The appendix shows the digital object identifiers (DOI) for the ten articles selected with the studied search vector: UT=(WOS:000262291600024 OR WOS:000347597100010 OR WOS:000361056800005 OR WOS:000399565200003 OR WOS:000427999100007 OR WOS:00-0434040000023 OR WOS:000448559400443 OR WOS:000462664200080 OR WOS:00061281-0000004 OR WOS:000668468900001).

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