

Green engineering that focuses on ecotourism as an environmental strategy

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ABSTRACT: Due to the results of an analysis of ecotourism in Colombia, there was found a need to define the work priorities of tourism managers of tourist areas or environmental reserves in Colombia [1]. The prospective study was conducted in the areas, where the Universidad Cooperativa de Colombia (UCC) operates. Seven specific places that have conservation zones impacted by anthropogenic activities or natural parks in the vicinity were studied. There was a positive view of the state entities for control and promotion in charge of PROCOLOMBIA (government agency in Colombia), and nationally, the Tourist Promotion Fund due to the strategic and organisational management using green engineering [2]. Prospective tools were applied by experts from the regions to improve the environmental management of tourism managers and to ensure that ecotourism supports environmental education and economic development of the regions through integrated schemes, such as the Employee Fund, Mutual Associations, Solidarity Companies and Community Companies [3].

Keywords: Ecotourism, prospective, Delphi survey, environmental conservation, social integration

INTRODUCTION

Many countries have shown an interest in ecotourism, motivated by the view that growth of the tourism sector may be consistent with conservation and preservation [4]. Sustainable tourism is focused on conservation [5][6]. The previous government of Colombia promoted tourism throughout the country as part of the peace agreement. Included were strategies to mitigate environmental impact and social integration.

The following general objective for ecotourism was set: to improve or implement factors related to corporate management and socio-ecological management, to achieve ecotourism in Colombia. This should become a tool, post-conflict, for regional economic growth through ecological marketing.

The specific objectives proposed were as follows:

- Determine how organisational management of ecological business in Colombia contribute to regional and social development.
- Create strategic scenarios for ecological marketing, so that ecotourism managers, as part of their socio-ecological administration, contribute to the economic and social needs of the country.
- Sensitise communities to the importance of ecotourism for regional growth.

The above objectives can be achieved by integrating the efforts of regional experts who can employ predictive tools, such as the Delphi survey, analysis of scenarios and strategies. This can lead to associative models and growth in sustainability of the communities. In order to understand the research, it is important to define the pillars that support this study viz. tourism, ecotourism, ecological marketing and associativity.

Tourism

There are two types of tourism:

- Passive tourism - also identified as Fordism tourism, which is conventional tourism and involves the use of natural resources in an unlimited manner, regardless of the negative impact that is caused to the harmonious and sustainable growth of the tourist areas.
- Alternative tourism - also called active tourism characterised by a post-Fordism vision in which the active participation of tourists is required. This includes cultural, rural, naturalistic, adventure tourism and the student scientist [7].

As can be seen from Figure 1, a good proportion of Columbia has tourism as a source of income. The director of Tourism of the Ministry of Commerce, Industry and Tourism in 2001, G.A. Toro, assured that the government seeks to associate the efforts of the Colombian government with the UNWTO (United Nations World Tourism Organisation) to take advantage of the experience that this international organisation has in the field of promotion [8].

As can be seen from the figure, there are many areas that can be improved by an organised implementation of ecotourism.

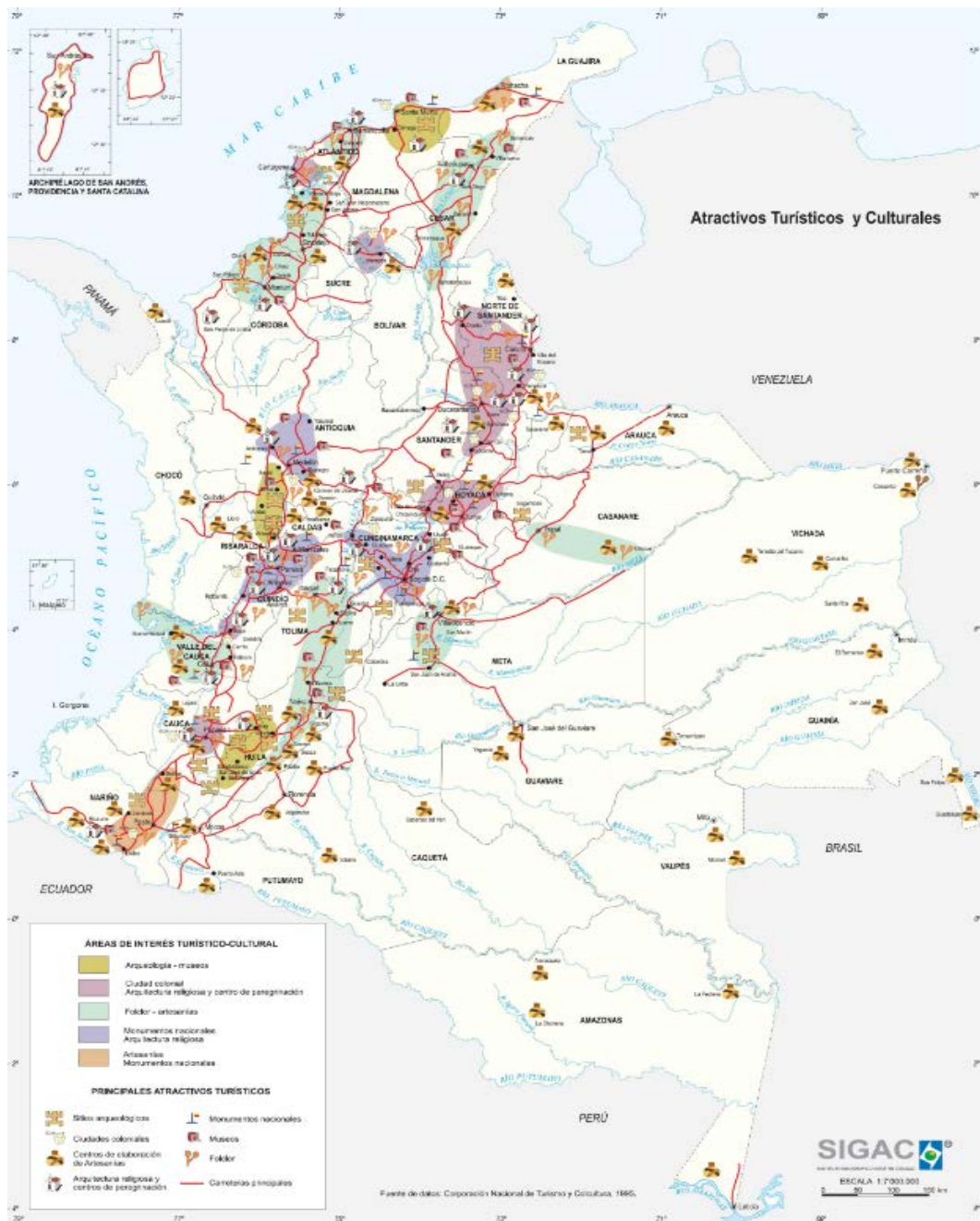


Figure 1: Map of Colombia's tourist and cultural attractions [9][10].

Ecotourism

The Mexican architect, Héctor Ceballos-Lascuráin, coined the term *ecotourism* in 1983. Since 1971, he had worked on all aspects of the planning and development of sustainable tourism. Ceballos-Lascuráin defines ecotourism as:

...the execution of a trip to natural areas that are relatively undisturbed or polluted, with the specific objective of studying, admiring and enjoying the panorama with its plants and wild animals, and likewise any manifestation cultural (past and present) that is found in these areas, which fosters an active and socioeconomically beneficial involvement of local populations [11].

As shown in Figure 2, the relationship between tourism and ecology requires making leisure activity and recreation a time to enjoy, save and respect nature, and to do so without damaging the environment [12]. Ecotourism also provides new alternatives for tourists based on sustainable development, seeking recreation and education through the observation and study of nature, while having a minimal impact on natural ecosystems [13][14].

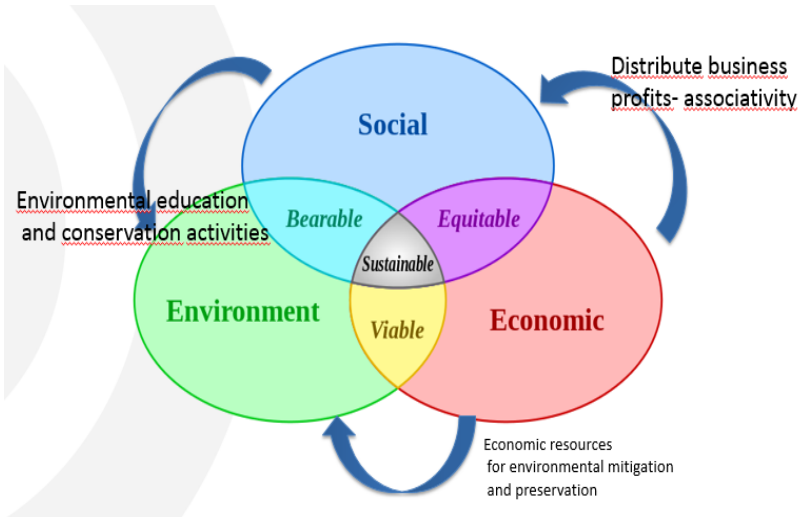


Figure 2: Components of ecotourism.

An important portion of the income generated by these ecotourism activities is destined for the promotion and conservation of the natural areas where the ecotourism is carried out. The World Tourism Organization (UNWTO) defines ecotourism as:

...all forms of tourism in which the main motivation of tourists is the observation and appreciation of nature and that contribute to the conservation of the natural environment and cultural heritage with the least possible negative impact [15].

This organisation also recognises that, in addition to actively contributing to the conservation of the natural and cultural heritage, ecotourism involves local and indigenous communities in its planning, development and operation. Therefore, it is suited to independent travellers, as well as small groups.

The IUCN (International Union for Conservation of Nature), defines ecotourism as:

That environmentally responsible tourist modality consisting of traveling or visiting natural areas in order to enjoy and appreciate nature (as well as any cultural manifestation of the present and the past), which promotes conservation, has a low impact of visitation and encourages active involvement and is socioeconomically beneficial for local populations [16].

Therefore, ecotourism is similar to sustainable tourism regarding the economic, social and environmental impacts of tourism; but differs from sustainable tourism in that it actively contributes to the conservation of the natural and cultural heritage. This includes indigenous communities by contributing to their well-being. It interprets the natural and cultural heritage of the destination for visitors and lends itself to a small flow of visitors. Sustainable tourism is linked to the social development of the area to be conserved. Therefore, sustainable tourism applies to all forms of tourism and all types of destination, including mass tourism and different destination segments.

The principle of sustainability refers to the environmental, economic and sociocultural aspects of tourism development and the balance that these must have in the long term. Thus, sustainable tourism must ensure the optimal use of natural resources, respect the sociocultural authenticity of the host communities and ensure socio-economic benefits for all those involved [15].

Ecological Marketing

The interest in nature tourism and concerns for the deterioration of ecosystems have resulted in the inclusion of analysis of the natural environment in various disciplines, including marketing. Consumers seek products and services that

incorporate concern for the environment. Therefore, tourism managers' marketing strategies need to reflect the concern for, and interest in, ecology and the environment.

The above suggests an aim of marketing should be to recognise the client's awareness of the importance of preserving nature. Various terms are used for such marketing, including: ecological marketing, green marketing, environmental marketing, eco-marketing and sustainable marketing [17].

Therefore, environmental marketing assumes environmental management as the responsibility of the tourism company. This is a change of perspective in the way of doing business and demands a global commitment from the company [18].

Green marketing is an aim to satisfy human needs with the least harmful impact on the environment. This marketing includes a set of communication policies and strategies (promotion, publicity and public relations, among others) aimed at obtaining a comparative advantage to differentiate the products or services offered from competitive brands, thus achieving increased market share [19].

Associativity

The sustainable growth of the ecotourism regions is possible through the integration of communities in models of associativity. This allows them to grow, starting from *solidarity* strategies, taking into account historical experiences, the diversity of possible enterprises and, in particular, with the emergence of a wide range of new self-managed social ventures. This is particularly so in Latin American countries, with their entrenched practices typical of a subsistence economy. A scheme that is a classification of the diversity of types of ventures is shown in Figure 3.

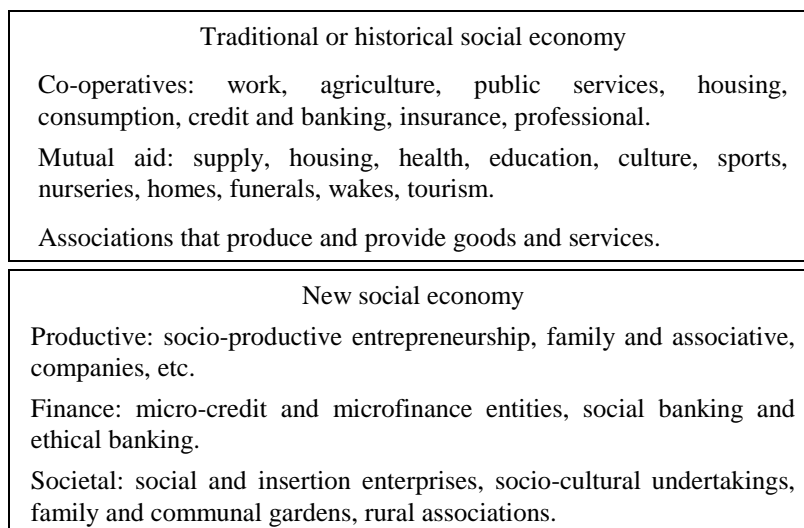


Figure 3: Types of venture [3].

It should be noted that this diverse set of ventures has tended to expand in recent decades in response to the profound structural changes brought about by economic globalisation and the withdrawal, in Colombia, of the state from the economy and society (ES).

Although in its broadest sense the social economy, particularly in Latin America, tends to include the economic initiatives aimed at the satisfaction of needs, in its strategic sense, it is based mainly on entrepreneurship, which may arise at the initiative of the interested parties or from collective or community groups.

As organisational entities, the ES projects result in productive organisations that generate goods and services in a variety of economic forms. These may include mercantile forms (monetary exchange or not) or non-mercantile involving redistribution or reciprocity [3]. When applying any of these models it is necessary to have a social, economic and environmental equilibrium, which leads to true sustainability for Colombia.

METHODOLOGY

A prospective descriptive research study was carried out. The investigative process was developed in phases, from the formation of the work teams, to the sensitisation of the tourism managers who were part of the sample. The methodological phases of the project are shown below.

- Phase 1: Consolidation of work between headquarters;
- Phase 2: Conformation of inter-venue teams;
- Phase 3: System definition;

Phase 4: Analysis of the system;
Phase 5: Design of strategic scenarios;
Phase 6: Strategic direction.

Additionally, there are two subsequent phases that consolidate the proposed strategies. The phases will be developed using the implementation action (IA) methodology that will integrate the managers and the community in a participative partnership, allowing consolidation of strategies to improve recognition of the importance of natural resources in tourism areas.

Locations in the Study

In accordance with the methodology of the research project, the study regions were defined as shown in Table 1.

Table 1: Studied sites.

Region	Head	Place	Specific site
Centre	Ibague	Chaparral	Tuluni
Centre East	Bogota	Surroundings area	Cota Tenjo
	Villavicencio	Granada Paz de Ariporo	Eco hotel Cascadas
North	Santa Marta	Buritaca	Playas
	Monteria	Tierra Alta	Las Guartinajas
South West	Cali	Buenaventura	Parque Uramba Playa Pianguita

For each of the sites, a situational analysis was developed; four categories, seven dimensions and 89 factors were defined as shown in Table 2 (partial data). These are important in the implementation of green engineering strategies, and include the structural and organisational aspects of formal and informal tourism companies, and the environmental education models necessary to achieve ecotourism in Colombia. Seventy four factors were defined for a Delphi survey, see Table 2.

Table 2: Important ecotourism factors.

Ecotourism (EC)			Marketing (MAR)			Post-conflict (POS)	
Environment (AM)		Social (SOC)	Economic (ECO)	Tourism (TU)	Ecological (EC)	Inclusion (IN)	Reparation (RE)
Education (E)	Conservation (C)						
Tourism approach (ENF)	Weather (CLI)	Cultural diversity (DIV)	Tourist planning (PLT)	Territorial marketing (MAT)	Ecotourism product (PRE)	Training (FOR)	Urban and rural security (SEG)
Quality of tourist service (CAL)	Hydrography (HID)	Sense of belonging (SEN)	Tourist infrastructure (INT)	Typical gastronomy (GAS)	Programs for sustainability (PRS)	Associativity (ASO)	Economic benefits (BEN)
Interpretation (INT)	Eco-tourist places (SIT)	Information technology and communications (ITC)	Tourist economy (ECO)	Tourist conviction (CON)	Ecotourism design service and planning (PLA)	Trained staff (PER)	Local employment (EMP)
Cultural respect (RES)	Environmental and sustainability practices (PARA)	Social impact social (IMP)	Road infrastructure (INV)	Municipal architecture (ARQ)	Eco-efficient technological practices (PRA)	Participation of local communities (PAR)	Long-term policies (POP)
Scientific research (INV)	Contribution to the conservation of natural resources (CON)	Articulation of institutions (ART)	Access roads (VIA)	Customer satisfaction (SAC)	Signalling (SEÑ)	Accessibility (ACC)	Health services (SES)

The Delphi survey was designed for a minimum of four experts who meet the characteristics of professionalism and recognition in the areas as presented in Table 3.

Table 3: Delphi study experts.

Types of expert	
Economic	Official: secretary of finance
	Empiric: tour operator, hotel manager
	Formal: tours and restaurants
Social	Official: secretary of social integration
	Empiric: community leader
	Formal: foundation or non-government organisation
Environmental	Official: secretary of the habitat, national parks
	Empiric: guides, forest guard
	Formal: business with environmental management
Tourist	Official: secretary of tourism
	Empiric: business unit, informal tourism agency
	Formal: hotel manager

RESULTS

After applying the prospective tools, the following results were obtained:

- Specific action plans must be defined for the state to invest in mobility infrastructure improvements.
- In areas far from large urban centres, green engineering is required, such as the correct management of solid waste, e.g. using bio digesters, alternative energy, portable water treatment plants.
- Need to develop environmental education, both for the people in the tourism region and for the tourists.

In addition to these, there was a lack of dissemination of information and promotion of the internal culture of a region rather than its promotion as a tourist area. International hotels use their strategies for their economic benefit, but do not use the resources of the region for the region's benefit. In 60 percent of cases, the cultural diffusion of the region was not promoted. This failure is important, because culture is a differentiating factor and a benefit that can be lost if not promoted.

Informal guides can be effective to some extent, but many do not have enough knowledge about the region and can harm hotels, businesses or others. A solution to this would be to train them, so they are not deficient in the information they provide to tourists.

CONCLUSIONS

Through analysis of ecotourism in Colombia, a need arose to define the work priorities of tourism managers in Colombia. Hence, the study described above was carried out. Objectives were defined and achieved by integrating the efforts of regional experts with predictive tools, such as the Delphi survey, analysis of scenarios and strategies. This leads to associative models and growth in sustainability of the communities. In order to understand the research, it was important to define the pillars that supported this study viz. tourism, ecotourism, ecological marketing and associativity.

It cannot be denied that the environmental and ecotourism practices of the regulatory bodies have done an effective job, where they try to integrate the local community into the activities. This is seen in their participation in tourist places, such as the rapids in the rivers and the mountains. These are protected and governed with a demand for strict conservation. In addition, the aim is for continued expansion, since sites can be updated and expanded.

Finally, it is expected that the suggestions of the group will promote the International Ecotourism Society (TIES) in the region. Hence, Colombia should be a destination, where not only are tourist sites located, but also a space to expand environmental awareness and attitudes in the use of natural tourism resources.

In addition to international promotion, there is also a cultural need based on the preservation of the environment in the places where ecotourism is practised. Culture is an element that could be used as a mechanism for economic growth and would attract more customers and tourists to an area. This will go hand-in-hand with ecological activities (such as bird watching, ecological trails, water treatment) leading to sustainable ecotourism.

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BIOGRAPHIES



William E. Mosquera-Laverde graduated as a chemical engineer from the National University of Colombia, in 1993; Specialist in Higher Education at a Distance, National Open and Distance University - UNAD, in 2010 and full Masters in Environmental Management, University of the Andes, Bogota, in 2014. He is a Professor of Environmental Management at the Universidad Cooperativa de Colombia, co-researcher of the Strategic Noesis Group (UCC), and Director of the Seedbed Ecoestrategicos 023. His other engagements are as an Assistant Professor, researcher and a business administration programme director. He teaches courses oriented towards environmental management, operations research, quality management and finance. Since 1995, he has worked with the UCC's entrepreneurship centre involving sustainability management in vulnerable communities, as well as a consultant to various industrial companies.



Oscar A. Vasquez-Bernal is an Associate Professor in the School of Basic Sciences, Technology and Engineering at Universidad Nacional Abierta y a Distancia, Bogotá Colombia. He earned his BS in industrial engineering from Universidad Antonio Nariño, Colombia, and his Master's in business administration from UNAD Florida USA. He is presently a PhD candidate in engineering at Universidad Nacional de Colombia. He has published several journal articles and conference papers. Professor Vasquez-Bernal has been involved in projects with manufacturing and engineering companies. He is a management consultant in quality assurance, project management and safety management. He has taught courses in entrepreneurship, strategy and corporate logistics and innovation for engineers; his research interests include certification, accreditation, multi-criteria decision analysis and optimisation. He is a member of NFPA, LACCEI and IEEE.



Claudia Patricia Gómez-Espinosa as a Master of Consumer Psychology is a business administrator. She has gathered considerable expertise as a co-investor of prospective projects with the solidarity and ecotourism sector, research processes and student-grade labour consultancy, business administration programme, on issues of solidarity economy. As a teacher, she has managed the management of social organisations and social marketing, as well as systematic ecotourism marketing reviews. She has identified marketing plan variables for post-conflict zones. Successful aspects of her experience come from the perspective of social marketing; it will be strategically an opportunity for development and growth for the communities under study.