

Economic and conservation strategies to strengthen Colombia's rural sector

Estrategias económicas y de conservación dirigidas a fortalecer el sector rural en
Colombia

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ABSTRACT

The non-identification of economic value opportunities within conservation strategies, the disrecognition of the potential that could be gained by implementing them and the inherent implications of new market models that demand greater efficiency and sustainability of the economic and productive sectors; it results in the wasting of a new field of institutional articulation options and market positioning that revolves around the need to strengthen economic strategies linked to conservation tools, in this way implementing economic and conservation strategies aimed at strengthening the rural and tourism sector in Colombia, is the overall objective of the project, the results regarding the diagnosis of areas and sectors of potential interest in addition to the Report with indicators for communities and their territory, the figures for estimating tourist load capacity and the design of promotional material, didactics and games for the brand positioning of tourism promotion and workshops for knowledge transfer, training in: training of leaders in biocommittee and development of valuation tools and sustainable economic value chains and identified as an area of opportunity for the development of tourism for purpose in the municipality , consolidate biological information as a tool in the construction of new chains and leverage of the small service units linked to is allowing the appropriation of the territory results in quality of life for communities in strategic areas.

Keywords: Biodiversity, Sustainability, communities, territory, economy

RESUMEN

La no identificación de oportunidades de valor económico dentro de estrategias de conservación, el desconocimiento del potencial que se podría obtener al implementarlas y las implicaciones inherentes de los nuevos modelos de mercado que exigen mayor eficiencia y sostenibilidad de los sectores económicos y productivos; resulta en el desaprovechamiento de un nuevo campo de opciones de articulación institucional y posicionamiento de mercados que gira en torno a la necesidad de fortalecer estrategias económicas ligadas a herramientas conservacionistas, de esta manera implementar estrategias económicas y de conservación dirigidas a fortalecer el sector rural y turístico en Colombia, es el objetivo general del proyecto, los resultados en cuanto al diagnóstico de áreas y sectores de interés potencial además del Informe con indicadores de para las comunidades y su territorio, la cifras de la estimación de la capacidad de carga turística y el diseño de material promocional, didáctico y juegos para el posicionamiento de marca de la promoción turística y talleres para la transferencia de conocimiento, la capacitación en: formación de líderes en biocomercio y desarrollo de herramientas de valoración y las cadenas de valor económico sostenible e identificadas como área de

oportunidad para el desarrollo de turismo con propósito en el municipio, consolidan al a información biológica como herramienta en la construcción de nuevas cadenas y apalancamiento de las pequeñas unidades de servicios ligadas a está permitiendo la apropiación del territorio redunda en calidad de vida para las comunidades de áreas estratégicas

Palabras clave: Biodiversidad, Sostenibilidad, comunidades, territorio, economía

1. Introduction

The decisions that are made are the final process of the development process of a specific project of an individual or group of people or organizations, which is called decision making, small decisions are part of our daily life, therefore, we do not pay attention and do not take the importance they really have, such decisions have an impact on our lives and are made up of small to important decisions, for Méndez, J. E. R., Aguja, F. A. P., & Quintero, J. L. C. (2021) when establishing parameters of work and practice development they talk about how metrically the KPIS detected establish the value associated with the value of practice with organizational decision making.

The non-identification of economic value opportunities within conservation strategies, the lack of knowledge of the potential that could be obtained by implementing them and the inherent implications of the new market models that demand greater efficiency and sustainability of the economic and productive sectors, framed in the rural areas of the country, results in the waste of a new field of options for institutional articulation and market positioning that revolves around the need to strengthen economic strategies linked to conservationist tools.

The purpose of the research was given from the implementation of economic and conservation strategies aimed at strengthening the productive sector in the rural sector in Colombia, managing to identify opportunities for economic value within conservation in the sector from the estimation of the tourist carrying capacity, to design tools for environmental management, management, education of the area of impact of the project, which allows to qualify the community for the sale of goods and eco-systemic services as a strategy of empowerment of the territory, which according to . Rodríguez, C. E. L., Rubiano-Calderón, J. S., Aguja, F. A. P., Martínez, E. G., & Quintero, J. L. C. (2021) represented an adaptation of the pandemic, because their values were adapted to the social dynamics with which their environment develops.

2. Materials and Methods

Areas of study:

Department	Municipality	Date
Cundinamarca	Villagómez	2017
	Quebrada Negra	2017
	Alban	2018
	Villeta	2019
	Anapoima	2019
	Ubaté	2019
Guaviare	San José del Guaviare	2017 - 2020

Phase 0

DIAGNOSIS OF THE TERRITORY

Rapid Ecological Evaluation (REE)

Ecological assessments are analyses that generate information about the biota and ecological processes of an area or region (Table 1). Ecological assessments identify conservation targets at the level of large areas or at the species level within a particular region or study area. (Sayre, et al., 2002) This methodology will make it possible to prioritize the areas to be conserved in the municipality without affecting the economic activities of its inhabitants.

Table 1. *Biotic and ecological aspects surveyed using the rapid ecological assessment methodology.*

RAPID ECOLOGICAL EVALUATION (EER)	
Description of the study area	Access roads, life zone, climatological data, land use.

Cartographic data	Coordinates, map generation with appropriate software.
Vegetation	Description of vegetation, representative species, endemic species, endangered species, forest cover and agricultural areas.
Fauna	Species of economic interest, functional species, endangered species.
Communities	Type of community (indigenous, Afro-descendant, displaced, regional),

Phase 1

Baseline characterization

Once the basic ecology of the region has been diagnosed, the next step is to carry out biodiversity studies to make decisions regarding area conservation, species conservation and environmental compensation actions. The baseline methodology proposed by the Ministry of Environment and Territorial Development and the National Environmental Licensing Authority (ANLA) is used for this purpose. The following is a description of the components that are addressed and further developed with this methodology. (Zapata, Londoño, Gonzalez, Idarraga, & Poveda, 2010).

Table 2. *Description of the information obtained from the baseline characterization.*

BASELINE CHARACTERIZATION	
Abiotic environment	Geology, geomorphology, soils, hydrology, water use, hydrogeology, geotechnics, climate, air quality and noise.
Biotic environment	Terrestrial ecosystems, flora, fauna, aquatic ecosystems,

Socio-economic environment	Area of direct influence, area of indirect influence, ethnic groups, archeological aspects and landscape.
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Social and economic mapping

Social and economic mapping allows the stakeholders to assess the state of the territory in these aspects and to generate solutions to the environmental and social problems identified on a local action scale from their own perception. In addition, in economic terms, the community is aware of the shortcomings and the proposals for sustainable trade (biotrade) that they wish to implement.

Table 3. *Description of the information collected from the social and economic mapping methodology.*

SOCIAL AND ECONOMIC MAPPING	
Stakeholder mapping	Identification of community leaders and communities of high influence (children and youth), communities with more information (adults).
Primary data collection	Direct data collection workshops, design and mapping by the community, identification of focal points and areas of interest
Structured and semistructured interviews	Gathering of important information for the development of the project from specialized communities
Workshops on environmental change	Implementation of tools for change in the environmental management of the territory.
Field trips for spatial verification	Verification of the initial mapping of the territory

Collection of secondary information	Consultation of bibliographic sources, EOT
Official cartography for the area	Generate cartography for the territory (mapping with advanced technology) that supports decision making by the authorities.
Indicators of local environmental change	Activities and actions taken by the population for environmental compensation

Phase 2

Tourist carrying capacity

For the estimation of the Tourist Carrying Capacity in the possible trails, a hybrid procedure will be used that has modifications and methodological adaptations according to the place and the ecosystems that are expected to be observed. The methodologies are:

Tourist Carrying Capacity (TCC) (Cifuentes, 1992): Planning tool that requires management decisions. It is a relative and dynamic data because it depends on variables that can change over time and was adapted by Dueñas in 2010.

2. Limit of Acceptable Change (LCA) (StanKey, McCool, & Stoke, 1984):

It allows, through the selection of indicators, to monitor over time the possible impacts generated by anthropogenic activities.

Physical evaluation of trails

The purpose of this evaluation is to present the conditions, condition and physical characteristics of the trail in order to determine its difficulty. Within the physical particularities, the total distance of the trail, the elevation slope, the accumulated positive difference in elevation, and finally, the duration of the trail were considered.

Risk assessment of trails

It is important to identify whether the attraction or the protected area in general presents risks to the visitor's safety and physical integrity. A favorable scenario is that the protected area has identified the risks, can take actions to manage them, and consequently has them included in its emergency and contingency plan. For the risk assessment, the method proposed by IDAPA (2016) was adapted, where the trails were segmented into sections, taking as criteria for this segmentation the vegetation cover (open areas with little vegetation and wooded areas), the identification of potential risks was made based on the difficulty or effort required in passing or crossing these points

along each section, evaluating the risk through a matrix that was developed from the factors that define the risk.

Phase 3

Project management

Implementation of perception tools

Apply pedagogy aimed primarily at children and young people in order to generate environmental, social and economic sustainable awareness through environmental education workshops, puppets, and biota recognition activities.

- Analysis of the supply of environmental services and environmental impacts

An inventory of places to be exploited in the municipality focuses on the agro-ecotourism sector, for this analysis the methodology proposed by the Ministry of Commerce, Industry and Tourism (MINCIT) is used. (Ministry of Commerce, Industry and Tourism and Departmental Institute of Culture and Tourism, 2010)..

- Development of protocols, design and dissemination of graphic pieces that inform and train the community.

Once all the information has been collected, graphic pieces and protocols are generated for socialization with the community and leaders, with the aim of supporting decision making, generating inputs for regulatory development, etc.

- Brand positioning

Design of signage, graphic material, and documentary development

- Implementation of agreements for emblematic species

Enabling the appropriation of the knowledge of species conservation by integrating the biological value, the cultural value of the populations and the economic value within the chain of services.

Phase 4

Development of the process for the issuance of municipal agreements for the declaration of emblematic species for the conservation of fauna and flora for the regions.

PROJECT MONITORING

- Research proposals

Once the ecosystemic offer of the municipality has been diagnosed and analyzed, research proposals are proposed aimed at conservation, entrepreneurship, public health, carrying capacity in the tourism sector, environmental impact studies, and the development of a new environmental management system for the municipality.

ETHICAL CONSIDERATIONS

During the execution of the project, informed consents and consents will be used to duly use the information collected during the survey of the tourism dynamics of the areas of interest, as well as for social mapping, training and dissemination workshops. Likewise, the project has the necessary permits for the collection and management of organisms at the national level.

3. Results

The results presented below will be in accordance with each of the regions where each of the objectives proposed and mentioned have been elaborated and initiated. Thus, the temporality and spatiality of the supports will respond to each municipality at a precise moment of the implementation of the project method.

The results demonstrate the different contributions to the consolidation of biodiversity knowledge processes, contributions to conservation, transfer of knowledge to the community at different levels and strengthening of value chains linked to the new and important trend of nature tourism with purpose.

Therefore, within the group of results, processes such as the following will be described according to the objectives:

- Diagnosis of areas and sectors of potential interest.
- Estimation of tourism carrying capacity.
- Report with status indicators before, during and after project execution according to impact.
- Design of promotional material, didactic material and games for brand positioning for tourism promotion and workshops for knowledge transfer in the areas of interest of the project.
- Training in: training of leaders in biotrade and development of tools for the valuation and sale of ecosystem goods and services.
- Sustainable economic value chains identified as an area of opportunity for the development of purposeful tourism in the municipality.

- Qualification of human talent.

Detailed results by municipality for the case of Cundinamarca and for the case of Guaviare are presented below:

Identify opportunities for economic value within the conservation sector based on the estimation of tourism carrying capacity.	
Alban	<ol style="list-style-type: none"> 1. Results sheet Microbiological and physicochemical study of bodies of water 2. Flora Inventory of the areas of influence of the project municipality 3. Fauna Inventory of the areas of influence of the project municipality 4. Mapping of tourist trails 5. Characterization of edaphofauna
Anapoima	<ol style="list-style-type: none"> 1. Load capacity data sheets 2. Flora Inventory of the areas of influence of the project municipality 3. Fauna Inventory of the areas of influence of the project municipality 4. Results sheet Microbiological and physicochemical study of bodies of water 5. Mapping of tourist trails
Black gorge	<ol style="list-style-type: none"> 1. Results sheet Microbiological and physicochemical study of bodies of water 2. Physicochemical study of the soil in the "Las Mariposas trail". 3. Characterization of edaphofauna

Villetea	<ol style="list-style-type: none"> 1. Microbiological and physicochemical study of bodies of water 2. Flora Inventory of the areas of influence of the project municipality 3. Fauna Inventory of the areas of influence of the project municipality 4. Development of the environmental impact matrix at Salto de los Micos 5. Bioacoustics study on the Salto del mico trail 6. Characterization of edaphofauna 7. Mapping of the Salto de los Micos Trail 8. Diagnosis of real roads in Villetea 9. Diagnosis of tourism value chains
Villagómez	<ol style="list-style-type: none"> 1. Fauna Characterization of the municipality 2. Flora characterization of the municipality 3. Characterization of the tourist offer
San José del Guaviare	<ol style="list-style-type: none"> 1. Characterization of baseline 22 properties (CORPOLINDOSA) 2. Ecotourism opportunity spectra 22 properties (CORPOLINDOSA) 3. Tourist carrying capacity of 36 trails (CORPOLINDOSA) 4. Identification of risks of 36 trails (CORPOLINDOSA) 5. Classification of 36 trails (CORPOLINDOSA)

	<ol style="list-style-type: none"> 6. Characterization of tourism offer of 82 beneficiaries (CORPOLINDOSA - Visión Amazonia) 7. Typification of supply (Actual/Potential) 82 beneficiaries (CORPOLINDOSA - Visión Amazonia) 8. Identification of product offerings that can be linked to the tourism value chain. 9. Baseline characterization of ECONARE and VILLA LILIA 10. Tourist carrying capacity of 2 trails ECONARE and VILLA LILIA
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Design management and improvement plans as tools for environmental and risk management in the sector.	
Alban	<ol style="list-style-type: none"> 1. Risk management report on trails prioritized for tourism 2. Design of signage for tourist trails
Anapoima	<ol style="list-style-type: none"> 1. Rules of use and improvement plans
Black gorge	<ol style="list-style-type: none"> 1. Cartographic map of "Sendero las mariposas".
Villeta	<ol style="list-style-type: none"> 1. Technical report with results of the first 3 phases 2. Cartographic map of "Salto de los Micos".
	<ol style="list-style-type: none"> 3.
Ubaté	<ol style="list-style-type: none"> 1. Historical compilation, as a basis for management plans

	2. Interviews for the historical and tourism component
Villagómez	<p>1. TOURISM DEVELOPMENT PLAN FOR VILLAGÓMEZ CUNDINAMARCA2017 - 2029</p> <p>2. Route map</p>
San José del Guaviare	<p>1. Definition of the points for risk signaling</p> <p>2. Trail intensity signage</p> <p>3. Bioacoustics Regulations</p> <p>4. Water resource characterization sheets</p> <p>5. Birdwatching sheets</p> <p>6. Design of six circuits</p> <p>7. 17 Play Grounds</p> <p>8. Maps by circuit</p> <p>9. Tourism management map</p> <p>10. Map of tourism management and environmental zoning</p> <p>11. RFPNSL Tourist Operation Protocol</p> <p>12. Zoning plans per property (82 beneficiaries)</p> <p>13. Three Project Profiles according to the strategic lines of action defined in the strategic plan</p> <p>14. Regulation of observation of river dolphins inea geoffrensis ECONARE y VILLA LILIA</p> <p>15. Identification of the individuals of the inea geoffrensis population of the damas del Nare lagoon.</p>

Develop communication elements for the brand positioning of the areas of interest as a purposeful tourist destination.	
Alban	<ol style="list-style-type: none"> 1. Bird catalog of the municipality 2. Fauna information pieces of the municipality 3. Design of signage for tourist trails 4. Informative infographics on tourist trails 5. Infographics of the Camino Real 6. Publicity campaign on emblematic species of the municipality and environmental awareness.
Anapoima	<ol style="list-style-type: none"> 1. Project results booklet 2. Municipal wildlife game (Lottery) 3. Video of tourist attractions and brand positioning. https://www.youtube.com/watch?v=NnuX-TrxEtU 4. Infographics and illustrations of emblematic species. 5. Brochure on birds in the municipality
Black gorge	<ol style="list-style-type: none"> 1. Design of advertising pieces for the incentive of panela consumption. 2. Design of signage for tourist trails 3. Informative infographic of the "Sendero las mariposas" (Butterfly Trail).

Villela	<ol style="list-style-type: none"> 1. Logo for municipality web page 2. Biodiversity sheets for the website 3. Catalog of Fauna of the municipality 4. Flagship species posters 5. Environmental education tool (ladder game).
Ubaté	<ol style="list-style-type: none"> 1. Historical compilation booklet 2. Campaigns of appropriation of the culture and history of the municipality. 3. Tourist guide of the municipality 4. Book separator 5. Radio spot, tourist attractions of the municipality 6. 2 events for brand positioning of the municipality 7. Church brochure 8. Birds of the municipality brochure 9. Guide to the birds of the municipality 10. Bird banner of the municipality
Villagómez	<ol style="list-style-type: none"> 1. Bookmarks 2. Postcards 3. Talkers 4. Tourism portfolio
San José del Guaviare	<ol style="list-style-type: none"> 1. La Serranía de la Lindosa didactic booklet 2. Folding lives Guaviare 3. Product label design (CORPOLINDOSA - Visión Amazonia) 4. Strategic plan brochure

	<p>5. Billboard with maps of trails and tourist attractions</p> <p>6. Documentary diamond of the waters</p> <p>7. Biotrade primer Diamond of the waters</p> <p>8. Two short documentaries Publimetro</p> <p>9. Six short documentaries in collaboration with the GIZ (German Cooperation Agency).</p> <p>10. tps://www.youtube.com/watch?v=iLbUeAOLIXE&feature=youtu.be</p> <p>11. [: https://www.youtube.com/watch?v=ugzZE-o573k</p> <p>12. [: https://www.youtube.com/watch?v=fG-_idAkfX4</p> <p>13. : https://www.youtube.com/watch?v=u3xao6kHhU4&feature=youtu.be</p> <p>14. : https://www.youtube.com/watch?v=1ElezQmA3-k&feature=youtu.be</p> <p>15. : https://www.youtube.com/watch?v=mb2v1Od6PTk&feature=youtu.be</p> <p>16. [: https://www.publimetro.co/co/noticias/2019/10/31/el-guaviare-un-paraiso-que-renace-y-exalta-sus-riquezas.html</p> <p>17. https://www.publimetro.co/co/native/2018/11/09/conozca-los-guardianes-la-riqueza-natural-del-guaviare.html</p>
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Qualify the community around the sale of ecosystemic goods and services as a strategy for the empowerment of the territory.

Alban	1. Training of local population in orellana cultivation
Anapoima	1. Environmental education workshops
Black gorge	1. BioTrade training for local population
Villeta	1. BioTrade training for local population
Ubaté	1. Activities of appropriation of the culture and history of the municipality in educational institutions.
San José del Guaviare	<ol style="list-style-type: none"> 1. Diploma in bird and herpet watching techniques for 50 participants (guides in training, tourism service providers, corpolindosa members). 2. Diploma Memories 3. Pedagogy of local tourist culture 4. Training in sectoral technical standards 5. Training on venomous arthropods 6. Training in identification of venomous snakes 7. A Workshop with indigenous community (CORPOLINDOSA - Visión Amazonia) 8. Four institutional workshops (CORPOLINDOSA - Visión Amazonia) 9. Diploma in Tools for the management and planning of nature tourism in the Serranía de la Lindosa for 186 participants.

Value added

Alban	<ol style="list-style-type: none"> 1. Accompaniment of business roundtables 2. Implementation of a tool for knowledge transfer 3. Declaration of the Black Inca <i>Coeligena prunellei</i> and the frog <i>Atelopus farsii</i> as emblematic species of the municipality.
Black gorge	<ol style="list-style-type: none"> 1. Declaration of the armadillo <i>Dasypus novemcinctus</i> and the purple-flowered ocobo <i>Tabebuia rosea</i> as emblematic species of the municipality. 2. Accompaniment of business roundtables
Villeta	<ol style="list-style-type: none"> 1. Declaration of the gray-headed titi monkey <i>Saguinus leucopus</i> and the nocturnal monkey <i>Aotus griseimembra</i> as emblematic species of the municipality. 2. Logistical support for the development of the Regional Forum on Tourism with Purpose. 3. Logo design for the "Forum of tourism with purpose". 4.
Ubaté	<ol style="list-style-type: none"> 1. Socialization with the community (Tourist guides - Tourist leaders) 2. Contribution to the construction of the tourism inventory of the municipality. 3. Working with seniors Villa de San Diego
Villagómez	<ol style="list-style-type: none"> 1. Declaration of the two-toed bear (<i>Choloepus hoffmanni</i>) and the loggerhead palm (<i>Cyathea caracasana</i>), emblematic species of the municipality.

	<ul style="list-style-type: none"> 2. Accompaniment at business meetings 3. Accompaniment in tourist showcases
San José del Guaviare	<ul style="list-style-type: none"> 1. Accompaniment at business meetings 2. Accompaniment in tourist showcases

Some of these belong to the municipalities and organizations that participated in the project and are being used for decision making and design of legal tools in the organization of the territory, for this reason they cannot be shown yet, however, evidence of the beneficiaries of the impact, implementation and quality of the work carried out in the areas covered by the project is provided. Important concept as established by Huertas, M. C. P., Ante, F. J. G., & Aguja, F. A. P. (2021) that start from the development of the results, but how the community appropriates them.

Impact on the sustainable development objectives based on the results obtained.

ODS TARGET IMPACT





4. Conclusions

In terms of integration:

The tools designed for the collection of baseline information considered within the development of the project constitute a knowledge transfer strategy where the community goes from being passive to active agents in the collection of information, thus integrating research to the re-signification of the territories.

The community itself is integrated from the perception of the public and private sectors, achieving the development of shared responsibility based on the prioritization of areas of opportunity in the region from the economic offer materialized in the sale of environmental goods and services.

In terms of ownership:

The project reflects in its results the collective creation capacity of the researcher-community of communication elements that allow the empowerment of the spaces and natural areas present in each zone from the identification of the unique potentialities found in each ecosystem, positioning the brand of the same from the knowledge of its inhabitants.

In terms of data contributions:

The project's methodology makes it possible to generate biodiversity data on the natural and cultural resources of each region in order to deliver tourism portfolios that integrate the natural and human potential of the different areas of impact of the project.

The value of the project in generating replicable methodologies and approaches

Finally, it is interesting to conclude that the methodology developed for the data collection and community approach allows the strategy to be easily replicated throughout the country, given that we are a multicultural and highly biodiverse country. Work on replicating the methodology in different areas of the country.

Continue with the strategy generating greater public-private articulation.

To permanently socialize in the morning the results of each one of the products at regional and international level.

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