

Potential analysis resources for rural Tourism in the community of San Lucas, Amanalco; State of Mexico, Mexico

Análisis de potencial Turístico de recursos para Turismo rural en la comunidad de San Lucas, Amanalco, Estado de México, México

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Abstract

The San Lucas Community is a territory characterized by the inefficient promotion and practice of rural tourism, which has repercussions on the boom of projects within the region through the offer of activities derived from the use of nature, agriculture, and rural culture. Therefore, resources were identified and prioritized; the data collected were subjected to valuation matrices, measuring a total of 51 indicators. Subsequently, the calculation of the Tourism Potential Index was carried out along the lines of the pillars of sustainable development. As a result, the development of three different routes focused on gastronomy, agriculture and the nature of San Lucas was obtained. Likewise, as a means of dissemination, a website was implemented that will contribute to the promotion, to strengthen the strategies and thus encourage tourism in the study area.

Substantiable Development, Ecotourism, Agrotourism, Communitarian Development, Gastronomy Tourism

Resumen

La Comunidad de San Lucas es un territorio que se caracteriza por la ineficiente promoción y práctica del turismo rural que repercute en el auge de proyectos dentro de la región mediante la oferta de actividades derivadas del aprovechamiento de la naturaleza, la agricultura y la cultura rural. Por lo que se realiza la identificación y jerarquización de recursos; los datos recabados se sometieron a matrices de valoración, midiendo un total de 58 indicadores. Posteriormente se realiza el cálculo del Índice del Potencial Turístico sobre la línea de los pilares del desarrollo sustentable. Como resultado se obtuvo el desarrollo de tres distintas rutas enfocadas en la gastronomía, la agricultura y en el medio ambiente de San Lucas. Así mismo, como medio de difusión se implementó un sitio web que contribuirá a la promoción, para el fortalecimiento de las estrategias y así incentivar al turismo en el área de estudio.

Desarrollo sostenible, Ecoturismo, Agroturismo, Desarrollo Comunitario, Turismo Gastronómico

1. Introduction

According to the data the World Tourism Organization, in the last decade tourism has represented 7% of the world trade. However, it is inevitable to ignore the growing interest towards new trends that point to a conscious tourism interested in the contact with rural communities and the natural environment. As highlighted by (Sánchez Sánchez & Sánchez Jesús, 2018), for the current times rural tourism has been seen as an alternative for the economic impulse in the provinces with rural population, constituting itself as a tool for community development under the framework of sustainability (Parra Cárdenas, Cisneros Mustelier, & Velasteguí López, 2019). In addition, as highlighted by (González Domínguez, Osorio García, & Delgado Cruz, 2021), for these studies, it is important to understand the phenomena that occur in the rural environment, since this allows visualizing the productive strategies necessary to achieve the expected impact. Although, these places have an exceptional natural wealth, sometimes we face local ignorance of it, a case that involves the community of San Lucas, as well as the lack of job opportunities and the scarce promotion of rural tourism in the area.

Therefore, the study is developed with the objective of identifying the tourism potential of the place for the development of a rural tourism proposal that works as a strategy to solve the problems that negatively affect San Lucas. The research was divided into seven phases. In the first phase, the contextualization of the study area was carried out so that in the second phase a registry of the identified tourism resources could be obtained. Subsequently, in the third phase, an inventory of thirteen resources was prepared by means of a technical sheet. In phase four, the hierarchical ranking is deployed in accordance with the Manual for the Preparation and Updating of the Tourism Resources Inventory.

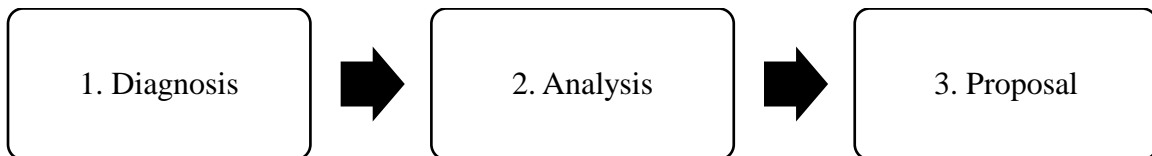
In the fifth phase, the resources were evaluated using calculation matrices, scoring a total of 58 indicators that gave a total of 174 points for the six evaluation matrices; the results obtained were submitted to the Tourism Potential Index (IPT) formula.

For phase six, according to the values calculated, the proposal of three routes of a gastronomic, agrotourism and ecotourism nature was elaborated. Finally, the seventh phase concluded with the programming of a web site for the promotion of rural tourism in San Lucas. It is important to consider that tourism is a subject that should be measured beyond the economic and focus on the social and environmental line for the proper implementation and management of tourism in rural environments.

2. Methodology

The methodology to be used was based on Quijano Ricaurte (2009) *"It can be inferred that, in general, a planning process includes the stages of diagnosis, analysis and proposal"*.

Figure 1 Tourism planning process



Source: Own Elaboration with information from (Ricaurte Quijano, 2009)

Therefore, the research is divided into three main stages (Diagnosis, Analysis and Proposal), giving a total of seven phases.

The Diagnostic stage comprises the following phases:

1. Contextualization of the territory.
2. Resource identification.
3. Registration and classification of resources.
4. Hierarchization and cartographic identification.

In the first phase (Contextualization of the territory) of this stage, an information sheet of San Lucas was obtained based on the information registered by the National Institute of Statistics and Geography (INEGI) and the Municipality of Amanalco.

Table 1 San Lucas Information Sheet

Geographical location	Community of San Lucas, Municipality of Amanalco, State of Mexico.
No. of inhabitants	1009
Predominant economic activity	Agriculture, livestock, fishing.
Predominant culture	Otomí
Level of marginalization	High
Natural resources	Water bodies, flora, and fauna.

Source: Own elaboration with information from (National Institute of Statistics and Geography (INEGI), 2020) y (H. Ayuntamiento del Municipio de Amanalco, 2022)

These phases are elaborated based on the Manual for the Preparation and Updating of the Tourism Resources Inventory by the Ministry of Foreign Trade and Tourism of Peru (Ministerio de Comercio Exterior y Turismo [MINCETUR], 2018).

The categorization is divided into five categories in order to better manage an inventory (Table 2).

Table 2 Categories of Natural Resources

Category	Features
Natural sites	This category groups diverse elements of nature that, due to their own attributes.
Cultural manifestations	The different cultural expressions of the country, region or people are considered, from ancestral times (progressive development of a certain place), such as archaeological sites, historical sites, among others.
Folklore	It is the set of traditions, customs, legends, poems, arts, gastronomy, etc., of a given country, region or people. It refers to the intangible elements or goods of the culture that have prevailed until today.
Contemporary technical, scientific or artistic achievements	They include those current works, movable or immovable, that show the process of culture, civilization and technology, with relevant characteristics for tourist interest.
Scheduled events	Category grouping all organized events, current or traditional, public or private, that attract tourists as spectators or actors.

Source: Ministry of Foreign Trade and Tourism, 2018

For the fourth phase of this stage, the hierarchical ranking of the resources according to MINCETUR's Tourist Resource Hierarchy Chart, where the hierarchy levels were identified (Table 3).

Table 3 Hierarchy Levels

Hierarchy	Description
4	Exceptional tourism resources of great significance for the international tourism market.
3	Tourist resources with exceptional features, capable of motivating the flow of domestic and/or foreign visitors.
2	Tourist resources with some striking features capable of attracting regional or local visitors.
1	Tourist resources without sufficient merit to be considered at the level of the previous hierarchies.

Source: Ministry of Foreign Trade and Tourism, 2018

The second stage of analysis consists of the following phases:

1. Choice and adaptation.
2. Field visit and SWOT analysis.
3. Application and obtaining values.

In the selection and adaptation phase, a documentary search of 41 works (including articles and theses) was carried out, where the reference was taken from works such as the "Evaluation of Tourism Potential in the Pedro Vicente Maldonado Canton", by Narváez and the "Evaluation of Tourism Potential with GIS case: The Department of Caldas, Colombia", by Olivar Londoño. This resulted in six valuation matrices comprising different indicators to be measured. Where, a score of 0-3 is considered, being three the high score.

In the evaluation of the Economic Factor, the following indicators were taken into account.

1. Correct distribution of resources
 2. Funds management
 3. Profit sharing
 4. Shock absorption
 5. Amount of employment generated
 6. Visitor age range
 7. Level of attractiveness of demand for festivities and events
 8. Alignment with tourism trends
 9. Visitor's travel motivation
 10. Offer of activities
- This matrix includes a total of 30 points for the evaluation.

For the evaluation of the environmental factor, the following indicators are used.

1. Conservation of natural areas or zones
2. Biotic factors in the ecosystem
3. Flora, fauna and geomorphology content
4. Clean environment
5. Renewable resources
6. Non-renewable resources
7. Exploitation of the resource
8. Regulatory principles and appropriate measures

The matrix includes 24 points as a total score.

In the assessment of the Social Factor, the indicators are understood as follows:

1. Cost of living
2. Community participation
3. Social organization
4. Practice of a dialect or language belonging to the territory.
5. Economic activity
6. Basic services
7. Public health services
8. Security
9. Population density
10. Clean environment

This matrix includes a total of 30 points for the evaluation.

The following indicators are used to evaluate the Resources Factor:

1. Flora and fauna content
2. State of conservation of the attraction
3. State of conservation of the environment
4. Natural deterioration factors
5. Anthropogenic deterioration factors
6. Natural hazards
7. Association with other attractions
8. Arterial pathway connectivity
9. Road safety
10. Millenary practices
11. Content of intangible assets
12. Custom content
13. State of conservation of the environment
14. State of functionality of the cultural heritage
15. The population of the territory is sympathetic to the presence of tourists.
16. Number of visitors motivated by activities related to rural tourism
17. Gastronomic ethnicity
18. Practice of a dialect or language belonging to the territory.
19. Beliefs and rituals
20. Millenary practices
21. Content of intangible assets
22. Custom content
23. State of conservation of the environment
24. State of functionality of the cultural heritage
25. The population of the territory is sympathetic to the presence of tourists.
26. Number of visitors motivated by activities related to rural tourism
27. Gastronomic ethnicity
28. Practice of a dialect or language belonging to the territory.
29. Beliefs and rituals

The matrix includes 87 points as a total score.

The natural resource consists of 57 points, while the cultural resource consists of 30 points.

Regarding the assessment of the Random Factor, the following indicators are considered:

1. Voice and data connectivity
2. Signage and mobility
3. Support infrastructure
4. Type of access roads to the territory
5. General conditions of access roads
6. Type of transport
7. Crossover areas
8. Arterial pathway connectivity
9. Road safety
10. Resting point facilities on access roads

Considering that this is a random value, accessibility is taken as a factor to be measured in this work.

This matrix includes a total of 30 points for the evaluation.

Likewise, a Tourism Potential Index formula was obtained based on the pillars of sustainability

$$I.P.T = VE + VA + VS + VR (RN + RC) + "a" \quad (1)$$

Where:

I.P.T= Index of Tourist Potentiality

VE= Economic Value

VA= Environmental Value

VS= Social Value

VR= Recourses Value

RN= Natural Resource

RC= Cultural Resource

a= Accessibility

The main basis for both the matrices and the formula are the pillars of sustainability, ecological, social and environmental.

The third and final stage, Proposal, comprised two phases:

1. Identification of activities.
2. Proposal design.

3. Results

Stage 1. Diagnosis

Phase 1.1. Contextualization of the territory

The different aspects obtained from San Lucas were captured in an information sheet with relevant data on the community (Table 1).

Phase 1.2. Identification of resources

The identification was based on field visits and information provided by the villagers, resulting in a list of resources (Table 4).

Table 4 Identified resources

Tourist Resource	Features
San Lucas Ecotourism Park	Mountain biking trails and scenic areas
Cañada Oscura Reservoir	Water body
Ojo de Agua	Water spring
El Pocito	Water spring with signs of deterioration.
Cachanillas Ranch	Agro-tourism activities
San Lucas Church	Festivities
Elaboration of Artisan Bread	Economic activity
Mushroom Harvesting	Searching for edible wild mushrooms
Elaboration of Pulque	Self-sustaining activity
Gastronomic diversity "Los Patos Restaurant".	Preparation of various local dishes
Otomi Language	It is part of the cultural identity
Crops	Daily activities
Trout Farm	Breeding and production process

Source: Own Elaboration

Phase 2.3. Registration and classification of resources

The registry is made by means of technical information sheets, giving a total of 13 records. An inventory of the resources recorded is also obtained (Table 5).

Table 5 San Lucas resource inventory

Category	Type	Tourist Resource
Natural Sites	Landscape Areas	San Lucas Ecotourism Park
	Springs	Cañada Oscura reservoir, Ojo de Agua, El Pocito, Rancho Cachanilla, San Lucas Church
Cultural Events	Architecture and urban spaces	Rancho Cachanilla, San Lucas Church
Folklore	Gastronomy	Artisan Bread Making, Mushroom Picking, Pulque Making, Gastronomic Diversity, "Los Patos" Restaurant.
	Ethnic groups	Otomi Language
Contemporary technical, scientific and artistic achievements	Farming and fishing operations	Cultivation of corn, beans, peas, trout farm.

Source: Ministry of Foreign Trade and Tourism, 2018

Phase 2.4. Hierarchization and cartographic identification

The hierarchy is determined by criteria to obtain the degree of importance and usefulness (Table 6).

Table 6 Ranking of tourism resources.

Tourist Resource	Total score	Hierarchy
Bike Park San Lucas	32.2	2
Depósito de Cañada Oscura*	17	1
Ojo de Agua (Adelaido)	17	1
El Pocito	14	1
Rancho Cachanilla	20	2
Iglesia de San Lucas	19	1
Elaboración de Pan	18	1
Recolección de Hongos	14	1
Elaboración de Pulque	18	1
Restaurante Los Patos	22	2
Lengua Otomí	14	1
Cultivación de Plantas	14	1
Granja de truchas	27	2

Source: Own Elaboration

Cartographic identification is carried out using Google Earth Pro (Figure 2)

Figure 2 Cartographic identification of resources



Source: Own Elaboration

Stage 2. Analysis

Phase 2.1. Choice and adaptation

The choice and adaptation was made on the basis of documentary research, based on a selective criterion, leaving the following works as inspiration to elaborate the analysis.

1. Evaluación del Potencial Turístico con SIG Caso: El Departamento de Caldas, Colombia (Olivar Londoño, 2020).
2. Evaluación del Potencial Turístico en la Comunidad de Bella Vista, Zona de Influencia del Bosque Protector Paso Alto, Parroquia San José de Minas, Provincia de Pichincha (Chontasi Imba, 2018).
3. Evaluación del Potencial Ecoturístico del Distrito de Sincos – Jauja (Parra Guillermo, 2019).
4. Evaluación del Potencial Turístico del Cantón Echeandía, Provincia Bolívar (Bonilla Gordón, 2019).
5. Evaluación del Potencial Turístico en El Cantón Pedro Vicente Maldonado (Narváez Chimarro, 2018).

Six matrices and a formula based on the pillars of sustainable development were adapted to calculate the tourism potential index for the resources of San Lucas.

Phase 2.2. Field visit and SWOT analysis.

The field visit was conducted with the purpose of preparing an Analysis of Strengths, Weaknesses, Opportunities and Threats (Table 7), based on the information gathered from semi-structured interviews that were carried out with a 90% confidence level and allowing a percentage margin of error of ten. The number of 82 is obtained as the number for the sample size. The analysis shows the most relevant aspects of the community.

Table 7 SWOT Analysis of the San Lucas Community

Strengths	Opportunities
F1. Almost virgin landscapes and without a high presence of urban footprint. F2. Ejidatarios' interest in conserving their land. F3. Existence of tourism resources.	O1. Participation in conservation and sustainable development projects. O2. Participation in farmers' fairs to share strategies for sustainable land use.
Weaknesses	Threats
D1. Lack of knowledge and low appreciation of the local culture (Otomí). D2. Low environmental and cultural education of the population. D3. Participatory interest of the locals to be part of projects that are already being developed in the community.	A1. Insecurity within the community. A2. Death of population that preserved local knowledge and customs. A3. Insufficient public resources to support conservation work.

Source: Own Elaboration

Phase 2.3. Application and obtaining values.

For this phase, the thirteen were submitted to the evaluation matrices, calculating a total of 174 points as the expected value.

Table 8 General Values of Evaluated Indicators of the Valuation Matrices

Factors	Recourses												
	San Lucas Ecotourism Park	Rancho cachanillas	Iglesia de san lucas	Dark glen reservoir	The adelaide cannon	Ojo de agua san francisco	Artisanal pulque bread	Mushroom picking	Otomí language	Plant cultivation	Pulque production	Los Patos Restaurant	Trout farm
Economic	10	10	10	8	20	10			3	18	17	25	26
Environmental	10	8	9	9	10	10	9			4	9	8	11
Social	23	23	23	23	23	23	23	23	23	23	23	23	23
Recourses	36	38	24	20	18	15	35	35	13	36	37	26	33
Accessibly	13	16	18	13	11	9	13	10	17	16	16	20	10
Total points	92	95	84	73	82	67	80	68	56	97	102	102	103

Source: Own Elaboration

Therefore, to obtain the Index of Tourism Potential (IPT), the values were converted to decimal figures, where the resources that obtained a result greater than 17.4 are considered to have a high IPT margin, those that exceed the margin of 5.7 are considered to have a medium margin, while a low margin is below 5.6 (Table 9).

Table 9 General Values of the Tourism Potential Index (TPI) Calculation.

Factors Resources	Economic (V.E)	Environmental (V.A)	Social (V.S)	Recourses (V.R)	Accessibility (V.A)	I.P.T	P.T.I margin
Parque Ecoturístico San Lucas	1	1	2.3	3.6	1.3	9.2	Medium
Rancho Cachanillas	1	0.8	2.3	3.8	1.6	9.5	Medium
Iglesia de San Lucas	1	0.9	2.3	2.4	1.8	8.4	Medium
Depósito de Cañada Oscura	0.8	0.9	2.3	2	1.3	7.3	Medium
El Cañito De Adelaido	2	1	2.3	1.8	1.1	8.2	Medium
Ojo De Agua San Francisco	1	1	2.3	1.5	9	6.7	Medium
Pan Artesanal de Pulque		0.9	2.3	3.5	1.3	8	Medium
Recolección de Hongos			2.3	3.5	1	6.8	Medium
Lengua Otomí	0.3		2.3	1.3	1.7	5.6	Low
Cultivación de Plantas	1.8	0.4	2.3	3.6	1.6	9.7	Medium
Elaboración de Pulque	1.7	0.9	2.3	3.7	1.6	10.2	Medium
Restaurante Los Patos	2.5	0.8	2.3	2.6	2	10.2	Medium
Granja de Truchas	2.6	1.1	2.3	3.3	1	10.3	Medium

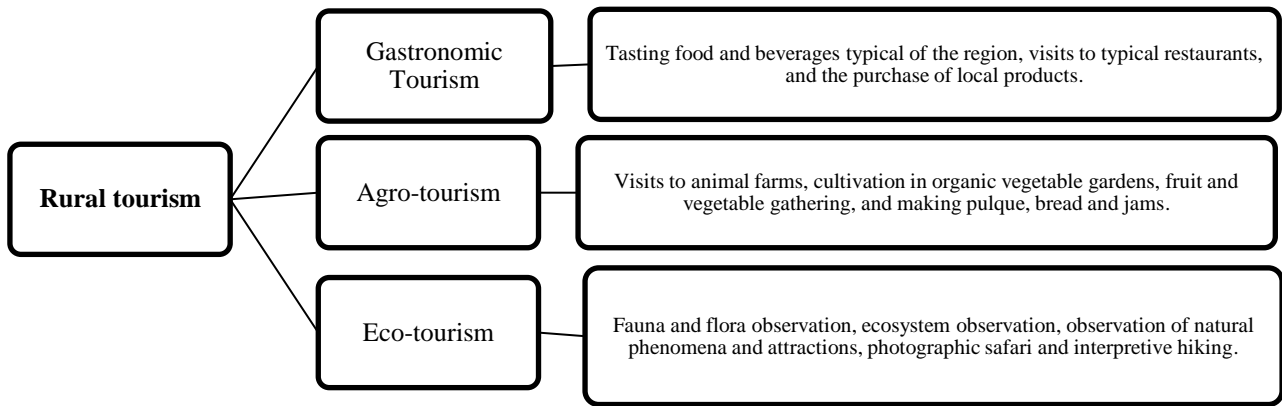
Source: Own Elaboration

Stage 3. Proposal

Phase 3.1. Identification of activities

In order to determine the activities, a schematization of the modalities that comprise rural tourism and the activities that are carried out for each one was elaborated. Based on the above results, the following activities were identified.

Figure 3 Diagram of rural tourism modalities



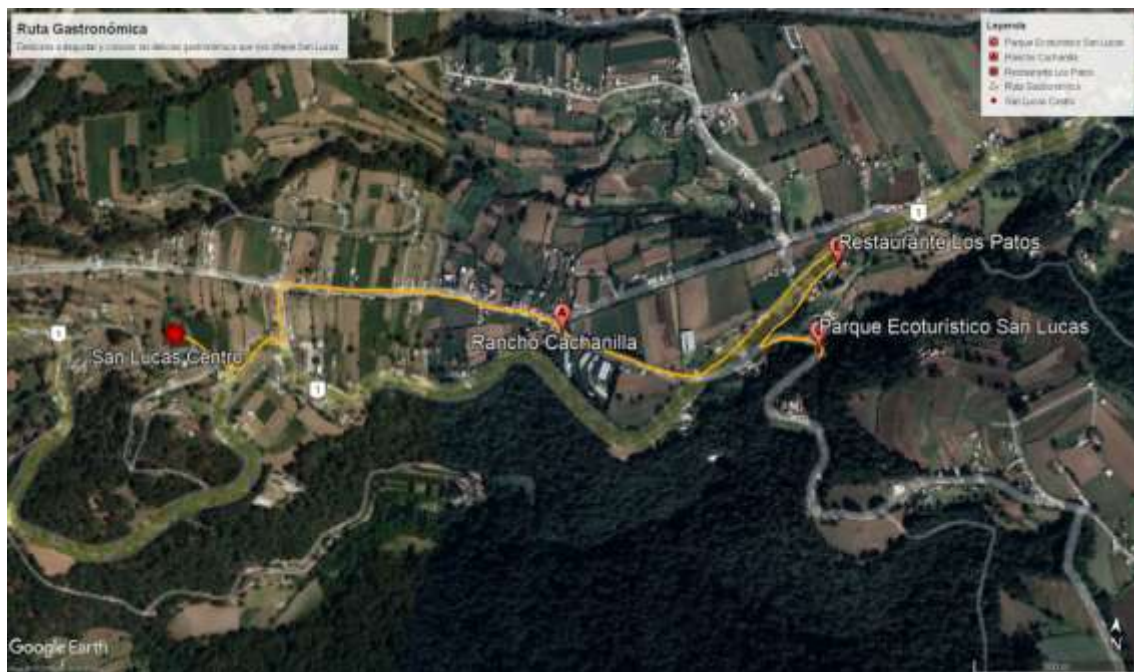
Source: Own Elaboration with information from (Cortijo Villa Rosa, 2013) and (Vida Alternativa, s.f.)

Phase 3.2. Proposal design.

For the proposal, the resources that obtained high scores are taken into account; however, those that did not reach a hierarchy or potential index are not an isolated case. Therefore, the proposal is based on the establishment of three routes with a rural tourism theme, routes that are intended to be a tool for environmental and cultural education for locals and visitors interested in learning about the beauties of this community.

The first proposed route is based on gastronomic tourism, including activities such as tasting food and beverages typical of the region, visits to typical restaurants, and the purchase of local products (Figure 4).

Figure 4 Proposed Gastronomic Route in San Lucas



Source: Own Elaboration

The second option includes agro-tourism with the following activities: visits to animal farms, cultivation in organic vegetable gardens, fruit and vegetable gathering, and making pulque, bread and jams (Figure 5).

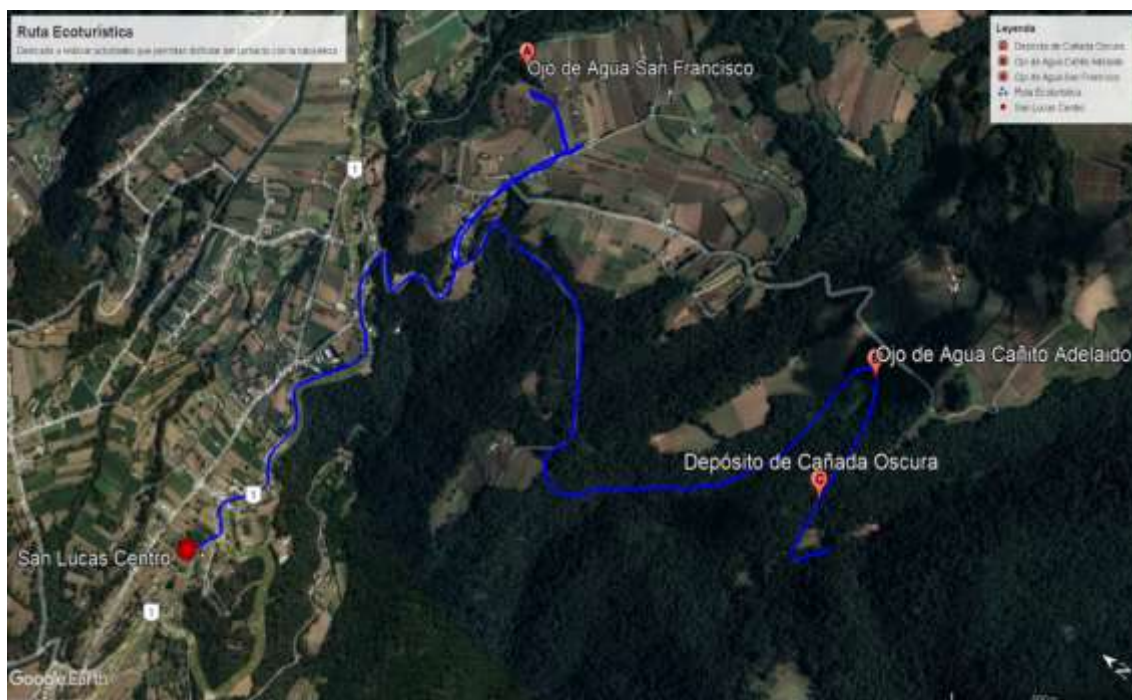
Figure 5 Proposed Agrotourism Route in San Lucas



Source: Own Elaboration

The third proposed route is based on ecotourism activities: fauna and flora observation, ecosystem observation, observation of natural phenomena and attractions, photographic safari and interpretive hiking (Figure 6).

Figure 6 Proposed Ecotourism Route in San Lucas



Source: Own Elaboration

Conclusions

Identifying the rural tourism potential of San Lucas Amanalco was of vital importance to generate proposals and strategies to improve job opportunities; this has an impact on the improvement of the quality of life of these communities through a greater economic benefit.

In this sense, there are areas that have sufficient resources to be promoted as a rural tourism destination; however, the lack of training of people in the proper management of resources limits the sustainable tourism activities that can be taken advantage of along the different routes. To complement the field study, it is necessary to generate hierarchy manuals of potential resources to enrich the routes and thus boost the attractiveness for visitors.

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