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FROM AGROECOTOURISM TO SPELEOTOURISM: OPPORTUNITIES FOR DEVELOPING AN INTEGRATED TOURISM PRODUCT IN SENTOB VILLAGE

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Abstract. This article examines opportunities for developing an integrated tourism product in Sentob village by connecting agroecotourism with potential speleotourism experiences. It considers how agricultural activities, rural hospitality, local cultural practices, and nature-based excursions could be combined with cave-related educational or adventure activities where suitable underground resources are verified. A qualitative, desk-based approach is proposed to assess product complementarity, community participation, accessibility, environmental conservation, visitor safety, and service coordination. Particular attention is given to the feasibility of linking accommodation, local food, farm experiences, walking routes, and professionally guided cave visits within a coherent itinerary. The article outlines development priorities, including resource inventories, site-specific assessments, guide training, cooperation among local service providers, and controlled pilot tours. It emphasizes that speleotourism integration requires evidence of accessible and suitable cave sites, together with appropriate conservation and safety arrangements. The proposed framework seeks to support diversified visitor experiences and local economic participation while preserving rural identity and natural heritage.

Keywords: agroecotourism, speleotourism, Sentob village, integrated tourism product, rural tourism, community participation, tourism diversification, natural heritage, sustainable tourism, destination planning.

Introduction

The development of rural tourism increasingly depends on combining local resources into coherent visitor experiences. Agricultural activities, rural hospitality, cultural traditions, and natural landscapes can complement one another when they are connected through suitable itineraries and coordinated services. Agroecotourism provides a framework for this integration by linking agricultural life with environmental awareness and community participation. Incorporating additional nature-based activities, including cave-related experiences where suitable resources exist, may offer opportunities to diversify rural tourism products.

The proposed connection between agroecotourism and speleotourism in Sentob village raises questions about resource compatibility, destination management, and local development. An integrated product could bring together accommodation, local food, agricultural experiences, walking excursions, and guided visits to appropriately assessed caves within the surrounding destination area. Its value would depend on how effectively these activities form a meaningful visitor experience and whether local service providers can coordinate their delivery. The presence, accessibility, and tourism suitability of relevant cave resources must first be established.

Agroecotourism and speleotourism offer different but potentially complementary experiences. Agricultural activities can introduce visitors to food production, seasonal work, and the relationship between communities and their environment. Cave-related excursions can provide opportunities for

geological interpretation and, where conditions permit, supervised exploration. Their integration could connect surface landscapes and rural livelihoods with an understanding of underground natural processes. However, such connections should be supported by accurate interpretation and verified information about the sites concerned.

Developing an integrated tourism product requires more than combining activities in a promotional package. Travel distances, seasonal availability, visitor abilities, service quality, and the time required for each activity influence itinerary feasibility. A cave excursion may involve specialist equipment and safety requirements that differ substantially from those of a farm visit or village walk. Product design must therefore identify suitable visitor groups and communicate the physical demands and operating conditions of each component clearly.

Community participation is central to the proposed development approach. Local households and businesses could contribute accommodation, catering, guiding, transport, and agricultural demonstrations. Coordination among these providers would help establish booking arrangements, service standards, and responsibilities. Assessing how income and costs are distributed is also necessary to determine whether integration supports local development. Agricultural activities included in tourism should reflect residents' willingness to participate and remain compatible with their everyday livelihoods.

Environmental conservation represents another essential planning consideration. Visitor activities can create pressures on rural landscapes, water resources, walking routes, and underground environments. Cave access, in particular, requires assessment of geological stability, ecological sensitivity, route hazards, and emergency arrangements. Where these conditions cannot be adequately addressed, an integrated product may need to rely on other educational and nature-based experiences. Development should consequently proceed through resource assessment and controlled testing before broader promotion.

The purpose of this article is to examine opportunities for forming an integrated tourism product in Sentob village through the proposed connection between agroecotourism and speleotourism. The discussion considers resource complementarity, community participation, service coordination, conservation, and visitor safety. It seeks to outline a planning framework for assessing whether cave-related experiences can be incorporated into rural itineraries in a feasible and responsible manner, while supporting local livelihoods and preserving the character of the destination.

Literature review

The literature relevant to integrating agroecotourism and speleotourism brings together rural destination development, community participation, and the management of sensitive underground environments. These perspectives provide a conceptual basis for considering an integrated tourism product in Sentob village. Their application nevertheless requires evidence about local agricultural experiences, service capacity, visitor demand, and the availability of suitable cave resources.

Mousazadeh et al. (2023) examine sustainable behaviour in the management of Persian Qanats, emphasizing cooperation among visitors, local communities, and site managers. Although qanats are constructed underground heritage sites, the study offers a useful perspective on community involvement and responsible visitor behaviour. For an integrated rural tourism product, this approach supports defining the responsibilities of participating households, guides, and operators while establishing rules appropriate to each activity.

Piano et al. (2024) review the environmental impacts of tourism in show caves and propose a multidisciplinary approach to management. Their findings indicate that cave experiences require conservation planning alongside product development. Applied to the proposed Sentob itinerary,

this means that agricultural and village activities cannot by themselves establish the feasibility of a cave component; underground sites require separate assessment of their ecological characteristics and operating conditions.

Miler et al. (2024) provide empirical evidence of tourism-related changes in particulate matter and microclimatic conditions in the Škocjan Caves. Their recommendation for regular monitoring demonstrates the importance of reviewing environmental conditions during operation. Kusuma et al. (2025) complement this conservation perspective by examining safety and enjoyment in karst tourism models. Together, these studies support designing itineraries that account for both environmental sensitivity and visitors' abilities, expectations, and equipment needs.

Research by Xia (2024) examines geotourism sustainability through the relationship between energy use, water consumption, waste, and economic activity. Although the study concerns a Chinese geopark, its analytical perspective is relevant to evaluating resource use across a combined rural itinerary. Accommodation, catering, transport, and excursions should be considered jointly when assessing the environmental and operational implications of product integration.

Within Uzbekistan-focused literature, Usmanova and Lapasova (2023) discuss the development and promotion of speleological tourism, while Ismatullaeva and Usmanova (2024) compare Uzbekistan's cave tourism potential with experiences in New Zealand and Spain. These publications offer national context, but they do not establish the availability or suitability of caves for a Sentob-based itinerary. Local resource verification therefore remains an essential prerequisite for the proposed integration.

The reviewed sources support a framework connecting community cooperation, resource efficiency, conservation, and visitor management. However, this source base primarily addresses underground tourism and geotourism; it provides limited evidence on agricultural tourism experiences in Sentob itself. The present article consequently treats agroecotourism–speleotourism integration as a planning proposition requiring further local investigation, rather than an established tourism product.

Research methodology

This study adopts a qualitative, desk-based approach to examine opportunities for integrating agroecotourism and speleotourism into a tourism product centred on Sentob village. A narrative literature review and comparative analysis are used to connect principles of rural tourism, community participation, and cave management. The proposed integration is treated as a planning concept whose feasibility requires local verification.

The analytical framework considers six dimensions: resource availability, compatibility of activities, accessibility and itinerary design, community participation, environmental conservation, and visitor safety. Particular attention is paid to how accommodation, local food, agricultural experiences, walking routes, and potential cave excursions could complement one another. A qualitative SWOT analysis organizes possible development advantages and constraints, while scenario analysis considers two options: an agroecotourism itinerary and an expanded itinerary incorporating cave visits where suitable sites are confirmed.

The comparison examines travel requirements, seasonality, guide competence, equipment needs, service coordination, and potential pressures on natural resources. It supports identifying prerequisites for product development rather than assigning numerical scores or estimating economic returns.

The study does not include field inspections, household interviews, visitor surveys, cave measurements, or financial modelling. Consequently, it does not verify the presence or tourism suitability of caves accessible from Sentob. The resulting recommendations provide a preliminary

framework that should be tested through resource mapping, community consultation, safety and ecological assessments, and controlled pilot itineraries.

Analysis and results

The qualitative analysis suggests that agroecotourism and speleotourism could be connected through a tourism product centred on Sentob village, provided that the necessary resources and operating conditions are verified. The principal result is a proposed product framework linking rural hospitality, agricultural experiences, landscape interpretation, and conditional cave excursions. This framework represents a planning proposition rather than an existing itinerary assessed through field research.

The first finding concerns the complementarity of experiences. Agricultural activities can introduce visitors to rural livelihoods and food production, while walking excursions can explain relationships between landscapes, water, and settlement. Where suitable caves are confirmed, guided visits could add an underground geological dimension. These components could form a coherent educational theme connecting everyday life with the natural environment. Their integration would depend on accurate interpretation, practical travel arrangements, and residents' willingness to participate.

A second finding is that product development should distinguish a core rural itinerary from an optional cave component. Accommodation, local food, village walks, and agricultural demonstrations would themselves require assessment of availability and service capacity. Cave excursions would introduce additional requirements involving geological stability, ecological sensitivity, specialist guiding, equipment, and emergency response. Treating the cave component separately during feasibility assessment would help determine whether it can strengthen the overall visitor experience.

Table 1.

Proposed components of a Sentob-centred integrated tourism product

Proposed component	Potential visitor experience	Requirement for implementation
Rural accommodation	Interaction with hosts and an introduction to village life	Participating households, suitable facilities, and agreed service standards
Local food experiences	Understanding food preparation and its connection with agriculture	Host participation, hygiene arrangements, and reliable supply
Agricultural activities	Learning about seasonal cultivation and rural work	Farmer consent, appropriate timing, and visitor supervision
Village and landscape walks	Interpretation of settlement, landscape, and local livelihoods	Verified route information and competent guides
Cave-related excursions	Geological education or supervised exploration	Confirmed sites and detailed conservation and safety assessments
Coordinated booking	Access to connected activities through one itinerary	Clear agreements among service providers

Source: Author's conceptual synthesis. The components have not been verified through a local resource inventory.

The scenario comparison identifies different levels of complexity. A core agroecotourism itinerary would concentrate on household participation, agricultural scheduling, walking access, and service quality. An expanded itinerary including speleotourism would require those

arrangements together with specialist cave management. Its additional appeal must therefore be weighed against transport time, equipment costs, guide availability, conservation expenditure, and operational risks.

Table 2.

Qualitative comparison of proposed development scenarios

Assessment dimension	Core agroecotourism itinerary	Agroecotourism with a cave component
Experience focus	Rural life, food, agriculture, and surface landscapes	Rural experiences combined with underground interpretation
Resource verification	Hosts, farms, services, and walking routes	All core resources plus suitable cave sites
Professional preparation	Rural guiding and visitor service skills	Additional cave guiding and emergency competence
Seasonal constraints	Agricultural calendars, weather, and host availability	Core constraints plus site-specific cave access conditions
Environmental assessment	Water use, waste, paths, and agricultural disturbance	Core assessment plus underground ecological conditions
Feasibility evidence	Demand, costs, service capacity, and community consent	Additional evidence on cave suitability and operating costs

Source: Author's qualitative scenario analysis.

Community participation emerges as a central condition for integration. A combined itinerary requires coordination among accommodation providers, farmers, food service providers, guides, and transport operators. Responsibilities for bookings, payments, cancellations, visitor briefings, and complaints should be agreed before pilot operation. Transparent arrangements could help participating households understand expected income, costs, and workloads. The study does not establish how many households would participate or estimate employment effects.

Seasonality also affects product design. Agricultural experiences must follow actual production cycles and residents' work schedules. Walking and cave activities require their own assessment of weather and access conditions. Consequently, an itinerary should allow activities to vary by season while maintaining a clear visitor experience. Any claim that cave excursions would extend the tourism season would require evidence about site accessibility and visitor demand.

Environmental management should address the itinerary as a whole. Accommodation and catering create demands for water and waste management, while excursions may place pressure on paths and natural sites. If cave visits are introduced, monitoring must additionally consider underground conditions and disturbance. These requirements indicate that environmental costs should be incorporated into feasibility assessment and pricing.

The analysis further identifies the importance of visitor segmentation. Families, educational groups, and adventure travellers may differ in their interests, physical abilities, available time, and willingness to pay. A single package may therefore be unsuitable for all visitors. Optional activities and clearly described route difficulty could support more appropriate product choices. The demand for these alternatives should be tested through visitor research rather than assumed.

The resulting development approach begins with resource mapping and community consultation, followed by demand and feasibility assessment. Pilot itineraries should then be used to review timing, coordination, visitor satisfaction, operating costs, and environmental effects. A

cave component should proceed only where suitable sites and management capacity are demonstrated. The main contribution of the analysis is thus a framework for testing integration: its success depends on the compatibility of resources and services, together with evidence that the combined experience can operate responsibly.

Conclusion and recommendations

The study concludes that integrating agroecotourism with potential speleotourism experiences could provide a direction for diversifying tourism products centred on Sentob village. Rural accommodation, local food, agricultural activities, and landscape walks could form a core itinerary, while cave-related excursions could serve as an additional component where suitable resources are verified. The value of integration would depend on the compatibility of activities, effective service coordination, community participation, and responsible environmental management.

The principal conclusion is that the proposed product should be developed in stages. A cave component requires separate geological, ecological, safety, and operational assessment before its inclusion in an itinerary. Since the study relies on desk-based analysis, it does not confirm the availability of suitable caves accessible from Sentob or establish the commercial feasibility of the combined product. The findings therefore provide a framework for further investigation and pilot development.

The following recommendations are proposed:

1. **Map local tourism resources.** Identify willing hosts, agricultural experiences, food services, walking routes, transport options, and potential cave sites. Verify resource availability and access conditions through field investigation.
2. **Consult residents and service providers.** Establish whether households and farmers wish to participate, which activities they can offer, and how tourism would fit their everyday livelihoods. Participation should be voluntary and supported by clear agreements.
3. **Develop a core agroecotourism itinerary.** Connect verified rural experiences through realistic schedules, coordinated bookings, and agreed service standards. Adapt agricultural activities to seasonal conditions and production calendars.
4. **Assess the feasibility of cave excursions separately.** Confirm site suitability, environmental sensitivity, route hazards, guide requirements, equipment needs, travel times, and emergency arrangements before adding speleotourism activities.
5. **Provide practical training.** Prepare participants in visitor services, food hygiene, interpretation, and first aid. Cave guiding should require additional competence appropriate to the assessed route.
6. **Establish transparent financial and management arrangements.** Clarify pricing, payments, responsibilities, operating costs, and the distribution of income among participating providers. Include conservation and maintenance expenditure in feasibility calculations.
7. **Test the product through controlled pilot tours.** Evaluate visitor demand, satisfaction, itinerary timing, service coordination, costs, and environmental effects. Use the findings to improve the product before broader promotion.

The next step is to test this framework through local resource mapping, community consultation, and site-specific assessments. Their results should determine whether an integrated agroecotourism–speleotourism product can provide a coherent visitor experience while supporting Sentob's residents and preserving natural resources.

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