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Tourism and Recreational Complex with a Focus on the Indigenous Culture of Mazandaran

Arman Dahun^{1*} , Atiyeh Ghasemi¹ 

¹ Department of Architecture, University of Shahid Rajaei, Tehran, Iran; armandahun@gmail.com; atiehghasemi20@gmail.com.

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Abstract


The design of tourism–recreational complexes in contexts with specific climatic and cultural characteristics requires a context-based and multidimensional approach that can simultaneously respond to functional, environmental, and identity-related requirements. This study aims to clarify the role of vernacular architecture in improving the quality of tourism spaces in the Mazandaran region and to present an optimal design model. The research method is analytical–applied, based on library studies and the analysis of various spatial organization patterns (centralized, linear, clustered, radial, and organic). The findings indicate that none of the individual patterns alone can fully address the complexity of design in such projects. Among them, the hybrid clustered–organic pattern emerges as the most suitable option, as it creates a balance between functional efficiency, adaptation to climatic conditions, preservation of the natural context, and reinforcement of cultural identity. This pattern, by combining clustered organization with organic form-making, enables appropriate spatial dispersion, reduced density, improved natural ventilation, and enhanced spatial experience. Moreover, its alignment with the principles of vernacular architecture in the region strengthens the sense of place and creates an authentic experience for tourists. Ultimately, the results emphasize that successful design of tourism–recreational complexes requires a shift from fixed models toward process-oriented and context-sensitive approaches—an approach in which spatial organization emerges from the interaction between humans, nature, and culture, and can pave the way for sustainable tourism development in the region.


Keywords: Tourism, Vernacular architecture, Tourism–recreational complex, Clustered–organic pattern, Sustainability, Mazandaran.

1 | Introduction

This article, through reviewing definitions and historical contexts, underscores the necessity of focusing on the design of tourism spaces in Mazandaran province. According to the definition provided by the World Tourism Organization, tourism encompasses a set of activities undertaken by individuals who travel to places outside their usual environment for the purposes of leisure, relaxation, or other tasks, without residing there

 Corresponding Author: armandahun@gmail.com

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for more than a consecutive year. This concept has deep historical roots; travel and cultural exchanges in Iran have long been pursued, particularly through caravanserais and ancient routes. During the Safavid and later the Qajar periods, with the construction of caravanserais, guest houses, and the first modern hotels, hospitality facilities began to expand significantly [1].

Nevertheless, in today's tourism destinations such as Tonekabon and across Mazandaran, despite remarkable natural, historical, and cultural resources, the lack of adequate infrastructures, poor information dissemination, and the absence of integrated planning have limited tourists' stays to mostly short visits. At the same time, the diversity of tourists' preferences (based on income, age, travel purpose, etc.) and the necessity to ensure climatic comfort for visitors highlight that the design of accommodation and recreational facilities must simultaneously respond to climatic requirements, functional needs, and local cultural values.

The primary aim of this research is to achieve a revival of vernacular architecture as an approach compatible with the region's climate and culture, implemented through a recreational-tourist complex to facilitate sustainable tourism development in the area. The main research questions address the relationship between tourism and traditional/vernacular architecture in Mazandaran, the rationale for prioritizing recreational buildings, and the advantages of applying vernacular architecture in designing these spaces. The research methodology combines historical and field studies with comparative analysis of case examples. In the final section, the principles derived from Mazandaran's local architecture will be presented as a guide for the design of recreational and tourism spaces, and practical suggestions for developing such complexes will be offered.

The indigenous and traditional architecture of the Mazandaran region, as a testament to human adaptation to the local climate and culture, has long been recognized for its simplicity, human-centeredness, and dignified responsiveness to the needs of its inhabitants. However, in recent decades, the visual identity and physical structure of these areas have faced a serious crisis. Uncontrolled and irrational development in rural and suburban areas has led to the formation of a chaotic fabric that neither adheres to urban architectural principles nor retains the values of the region's traditional and rural architecture. This phenomenon has not only severely damaged the architectural heritage of Mazandaran but has also fueled the widespread migration of rural residents to cities, weakening the cultural and economic vitality of the region. The indigenous and traditional architecture of the Mazandaran region, as a testament to human adaptation to the local climate and culture, has long been recognized for its simplicity, human-centeredness, and dignified responsiveness to the needs of its inhabitants. However, in recent decades, the visual identity and physical structure of these areas have faced a serious crisis. Uncontrolled and irrational development in rural and suburban areas has led to the formation of a chaotic fabric that neither adheres to urban architectural principles nor retains the values of the region's traditional and rural architecture. This phenomenon has not only severely damaged the architectural heritage of Mazandaran but has also fueled the widespread migration of rural residents to cities, weakening the cultural and economic vitality of surrounding settlements [2].

Meanwhile, Mazandaran province, as one of the country's main tourism hubs, hosts a massive influx of travelers throughout the year. Despite this natural and historical advantage, the lack of suitable accommodation and recreational infrastructure, coupled with the neglect of climatic comfort requirements and local cultural values in current designs, has prevented the conversion of existing potential into sustainable development, reducing visitors' experiences to brief and limited visits [3].

From an environmental perspective, the increasing urban population and the development of urban heat islands have doubled the need for controlled interaction with nature. Therefore, creating accommodation and recreational spaces with a responsible, ecologically-based approach can help the local economy and establish stability hubs in surrounding settlements while preventing the overexploitation of natural resources [2].

Thus, the aim of this research is to provide an appropriate response to the contemporary tourism needs of the region by updating and reinterpreting the principles of Mazandaran's human-centered and traditional architecture. This goal is pursued through the selection of a "resort, recreational, and tourism complex" as the functional typology. This complex, as a "symbolic showcase," can display the finest cultural, economic,

and climatic features of the region while, as a cultural intermediary, conveying a message about the value and usability of rural architecture to both the local community and tourists.

Given the ongoing crisis of the destruction of traditional architecture, the lack of suitable design models, and the insufficient attention paid by authorities and academia to this issue, researching and presenting a coherent architectural model that integrates culture, economy, climate, and regional development is essential. Therefore, the central research question of this study is how the principles of vernacular and traditional architecture can be utilized in designing resort, recreational, and tourism complexes in Mazandaran in a way that not only responds to the functional needs of tourism but also contributes to preserving rural life, strengthening local identity, and promoting sustainable regional development. In this regard, the resort complex is considered a symbolic showcase capable of presenting the finest cultural, economic, and climatic characteristics of the region while also acting as a cultural intermediary that conveys the value and potential of rural architecture to both local communities and tourists through a human-centered and tradition-oriented architectural approach.

The primary objective of this research is to arrive at actionable executive solutions for the design of a tourism and recreational complex aimed at strengthening indigenous and traditional architecture while ensuring that the tourism industry serves the interests of the local community. A key secondary aim, pursued through this study, is to emphasize and preserve cultural and local values, thereby creating a suitable platform for symbolically promoting the region's native culture.

This study seeks to maximize tourist attraction by focusing on Mazandaran's vernacular architecture alongside its inherent natural potentials. The transformations in international tourism and the factors driving its development since the mid-19th century are significant and warrant careful consideration. Furthermore, the diverse economic, social, and political transformations of the 19th and 20th centuries have profoundly influenced the development of modern tourism, a subject of critical importance for our current analysis.

Given this context, where rapid development threatens heritage, and tourism potential remains untapped by culturally sensitive infrastructure, this research is imperative. It addresses the critical gap between global tourism trends and the need for place-based, sustainable development in Mazandaran. Establishing a design model that holistically integrates cultural preservation, local economic benefit, and climate-responsive design in a flagship project (the resort complex) is essential not just for architectural innovation, but for ensuring the cultural continuity and long-term economic resilience of the surrounding rural communities.

1.1 | The Aim of this Study

To design and analyze a tourist–recreational–residential complex with an emphasis on reflecting the local vernacular culture of the region, aiming to enhance the sense of identity, attract cultural tourism, and create a sustainable interaction between architecture, nature, and the local community.

This research systematically examines how cultural and traditional elements of each region can be integrated with the requirements and demands of modern tourism, whereas many previous studies have addressed architecture and tourism as separate fields of inquiry. The primary focus of this study is on the role of vernacular culture in shaping tourists' spatial experiences and enhancing their sense of place attachment—an aspect that has often been overshadowed in earlier research by an emphasis on the visual and formal dimensions of architecture.

Moreover, by presenting practical guidelines and actionable design strategies for tourist–recreational–residential complexes based on a vernacular-oriented approach, this study moves beyond purely theoretical analysis and adopts an applied and practice-oriented perspective. In addition, the simultaneous consideration of cultural and environmental sustainability, along with the integration of vernacular culture and sustainable development strategies across social, cultural, and environmental dimensions, is introduced as a novel approach to the design of tourism complexes, contributing to the preservation of local identity and the efficient use of natural resources.

This research is conducted using a descriptive–analytical approach and seeks to propose innovative solutions in architectural design through the examination of vernacular cultural components and case studies of tourist–recreational–residential complex designs.

In this study, library-based research is employed as the primary data collection tool, which includes the review of books, scholarly articles, theses, and other credible sources related to vernacular architecture, recreational complex design, and cultural tourism.

2 | Theoretical Framework

The theoretical framework of this study is grounded in the intersection of three main domains: vernacular architecture, sustainable tourism development, and the spatial experience of users within tourist–recreational environments. These three domains collectively provide the conceptual basis for understanding how architecture can mediate between culture, nature, and tourism. Vernacular architecture forms the core theoretical foundation of this research. It represents a historically evolved response to local climatic, cultural, and environmental conditions. In regions such as Mazandaran, vernacular architecture is characterized by the use of local materials, climate-responsive design strategies, and spatial configurations that reflect indigenous lifestyles. This study considers vernacular architecture not merely as a historical style, but as a living system of knowledge that can inform contemporary design practices. The second pillar of the framework is sustainable tourism development. Contemporary tourism theory emphasizes the need for balancing economic growth with environmental protection and cultural preservation. Within this perspective, tourist–recreational complexes are understood as key infrastructures that must support ecological sustainability, reduce environmental impacts, and contribute to the socio-economic development of local communities. The integration of sustainability principles ensures that tourism development does not compromise the cultural and natural assets of the destination. The third component of the framework focuses on spatial experience and place attachment. Environmental psychology and architectural theory suggest that the quality of space directly influences users' perception, behavior, and emotional connection to a place. In tourist environments, spatial legibility, sensory richness, and cultural authenticity play a crucial role in shaping memorable experiences and strengthening the sense of place attachment among visitors. By integrating these three theoretical dimensions, this study proposes that the design of tourist–recreational complexes should go beyond functional and aesthetic considerations and instead operate as a mediator between vernacular culture, environmental context, and contemporary tourism needs. This integrated approach provides the conceptual basis for developing design strategies that enhance cultural identity, environmental sustainability, and experiential quality in tourist destinations:

2.1 | Vernacular Architecture

Vernacular architecture, as the most fundamental theoretical basis of this research, is the result of the gradual adaptation of humans to the climatic, cultural, and environmental conditions of each region. In Mazandaran, this type of architecture is characterized by the use of local materials, climate-responsive design adapted to high humidity and rainfall, and spatial organization aligned with indigenous lifestyles [4].

In this study, vernacular architecture is considered not merely as a historical style, but as a living and evolving system of knowledge that can be applied in the contemporary design of tourist–recreational complexes.

2.2 | Sustainable Tourism Development

Sustainable tourism development emphasizes the balance between economic growth, environmental protection, and the preservation of cultural values. Within this framework, tourist–recreational complexes, as key infrastructures, must minimize environmental impacts while simultaneously contributing to the economic development of local communities [3].

In this research, sustainability is considered a fundamental design principle, including reduced energy consumption, efficient use of natural resources, and support for the local economy.

2.3 | Spatial Experience and Place Attachment

This section focuses on the impact of spatial quality on users' experience. According to environmental psychology theories, spatial design can significantly influence people's emotions, behaviors, and emotional connection to a place [5].

In tourism environments, factors such as spatial legibility, sensory diversity, and cultural authenticity play a key role in creating memorable experiences. These elements contribute to strengthening tourists' place attachment.

2.4 | Integration of Theory in Design

In this study, the integration of the three aforementioned domains forms the foundation of the design approach for tourist–recreational complexes. The goal is not to limit design to functional and aesthetic aspects, but to position it as a mediator between vernacular culture, natural context, and modern tourism needs [5].

This integrated approach can lead to the creation of spaces that are culturally meaningful, environmentally sustainable, and experientially rich and memorable for users.

Table 1. Integrated theoretical framework for designing tourist–recreational complexes.

Theoretical Component	Description	Keywords	Role in the Study
Vernacular architecture	Vernacular architecture is the result of the gradual adaptation of humans to climatic, cultural, and environmental conditions. In Mazandaran, it is characterized by the use of local materials, climate-responsive design, and spatial organization aligned with indigenous lifestyles.	Vernacular architecture, climate-responsive, local materials, place identity, environmental adaptation	Provides the basis for contextual design and strengthens cultural identity in the tourist complex
Sustainable tourism development	Focuses on balancing economic growth, environmental protection, and cultural preservation. Tourism complexes should minimize environmental impacts while contributing to the local economy.	Sustainability, ecotourism, environmental protection, economic development, local culture	Establishes sustainability principles and reduces negative impacts of tourism development
Spatial experience and place attachment	Spatial quality influences users' perception, emotions, and behavior. Legible, authentic, and sensory-rich spaces create memorable experiences for tourists.	User experience, spatial perception, place attachment, environmental psychology	Enhances tourist experience quality and strengthens emotional connection to place
Integrated design approach	Combines vernacular architecture, sustainability, and spatial experience into a holistic design framework for tourist–recreational complexes.	Integrated design, place identity, sustainability, contextualism	Provides a comprehensive design framework for developing tourism complexes

3 | Research Background

Tourism, as one of the most important economic and cultural activities of the present century, plays a significant role in the sustainable development of different regions. In this context, the design and construction of tourist–recreational complexes, as one of the main infrastructures of the tourism industry, have consistently attracted the attention of planners, architects, and researchers. Studies conducted in the field of tourism architecture indicate that spatial quality, sense of place, and the degree of compatibility of these complexes with the natural and cultural context have a direct impact on tourist attraction and visitor satisfaction [6].

Numerous domestic and international studies have emphasized the necessity of considering sustainability principles, climate-responsive design, and the application of vernacular architecture in the design of tourism spaces. The findings of these studies suggest that patterns derived from vernacular architecture, due to their historical adaptation to climatic, cultural, and social conditions, can contribute to reducing energy consumption, enhancing user comfort, and strengthening place identity. In contrast, neglecting these factors

in many contemporary projects has led to the creation of spaces that are incoherent, lacking identity, and in some cases detrimental to the natural and cultural environment [7].

In Mazandaran province, despite its unique natural, climatic, and cultural potentials, a significant proportion of existing tourism complexes have been designed based on imported models with insufficient attention to the region's vernacular architecture. This situation has not only weakened the cultural and physical landscape of the region but has also challenged valuable opportunities for sustainable tourism development and the reinforcement of the local economy. Moreover, a review of the existing literature reveals that relatively few studies have systematically addressed the role of Mazandaran's vernacular architecture in the design of tourist–recreational complexes [8].

Accordingly, the need for research that, through the analysis of vernacular architecture, climatic conditions, and cultural characteristics of the region, proposes appropriate design guidelines for tourist–recreational complexes is increasingly evident. Building upon previous studies, the present research seeks, through an analytical–applied approach, to bridge the gap between vernacular architectural theories and design practice in tourism projects, thereby contributing to the enhancement of spatial quality, place identity, and sustainability in the region's tourism development.

3.1 | Main Components and Key Elements of a Tourist–Recreational Complex

Tourist–recreational complexes, as multifunctional environments, are composed of a set of main components and key elements whose coordination and interaction play a decisive role in the spatial, functional, and experiential quality of these complexes. Identifying and explaining these components is a fundamental step toward the successful and sustainable design of tourism complexes.

The first essential component of tourist–recreational complexes is accommodation spaces, which include hotels, eco-lodges, villas, and temporary residential units. The quality of design in these spaces—such as the level of comfort, connection with nature, and compatibility with local culture—has a direct impact on tourist satisfaction and length of stay.

The second major component is recreational and leisure spaces, encompassing a wide range of active and passive activities, including sports facilities, walking paths, play areas, relaxation spaces, natural landscapes, and public open spaces. These spaces play a key role in creating vitality, functional diversity, and enhancing the overall tourism experience.

Cultural and social spaces, as the third component, provide a platform for presenting local culture, traditions, handicrafts, and community events. The inclusion of such spaces in tourist–recreational complexes contributes to strengthening place identity, increasing social interaction, and creating an authentic and distinctive experience for visitors.

Other important elements include service and support spaces, such as restaurants, catering facilities, retail spaces, welfare services, administrative areas, and infrastructure facilities. The efficiency and appropriate spatial allocation of these spaces significantly influence the overall performance of the complex and the ease of use for its users.

Spatial organization and accessibility are also considered essential components in the design of tourist–recreational complexes. Logical relationships between spaces, legible circulation paths, appropriate separation of vehicular and pedestrian movement, and attention to spatial hierarchy are among the factors that enhance both functional efficiency and perceptual quality.

Finally, attention to the natural context, climate, and sustainability principles is regarded as a fundamental element in the design of tourist–recreational complexes. The use of natural energy resources, environmental conservation, application of local materials, and reduction of negative environmental impacts can provide a

foundation for sustainable tourism development and harmonious coexistence between humans and nature [9].

3.2 | Primary Design Criteria for Tourist–Recreational Complexes

The design of tourist–recreational complexes requires a comprehensive and multidimensional approach that simultaneously addresses functional, cultural, environmental, and experiential requirements. In this regard, identifying the main design axes plays a significant role in achieving spatial quality, sustainability, and tourist satisfaction. The most important design axes of tourist–recreational complexes are as follows:

3.2.1 | Attention to the natural context and regional climate

The design of a tourist–recreational complex should be based on a thorough understanding of the site’s climatic characteristics, topography, vegetation, and environmental conditions. The use of natural ventilation, appropriate daylighting, proper building orientation, and harmony with the natural landscape not only enhances users’ thermal comfort but also contributes to reduced energy consumption and environmental conservation.

3.2.2 | Place identity and local culture

One of the fundamental design axes is the reflection of cultural identity and local architectural characteristics within the spaces of the complex. The use of spatial patterns, local materials, symbols, and elements derived from indigenous culture and traditions fosters a sense of belonging, strengthens place identity, and creates an authentic experience for tourists.

3.2.3 | Spatial organization and legibility of the complex

Appropriate spatial organization and the establishment of logical relationships among different functions are fundamental principles in the design of tourist–recreational complexes. Clear circulation patterns, spatial hierarchy, proper separation of public, semi-public, and private spaces, as well as the segregation of pedestrian and vehicular movements, play an effective role in enhancing both functional efficiency and perceptual quality.

3.2.4 | Functional diversity and responsiveness to users’ needs

Providing a diverse range of accommodation, recreational, cultural, and service spaces tailored to different groups of tourists is considered a key design axis. Such functional diversity increases the attractiveness of the complex, enhances social interactions, and extends tourists’ length of stay.

3.2.5 | Sustainability and environmental considerations

Attention to the principles of sustainable architecture—including the efficient use of natural resources, application of renewable energy, water management, use of environmentally compatible materials, and reduction of environmental pollution—is one of the key axes in the design of tourist–recreational complexes and plays an important role in sustainable tourism development.

3.2.6 | Quality of open spaces and landscape

Open spaces, natural landscapes, and green areas are integral components of tourist–recreational complexes. Proper design of these spaces, with an emphasis on visual continuity, spatial diversity, human scale, and interaction with nature, contributes to enhancing the quality of the tourism experience and increasing environmental vitality.

3.2.7 | Accessibility, safety, and supporting infrastructure

The appropriate design of pedestrian and vehicular access, provision of user safety, and attention to support services and technical infrastructure are among the other important design axes that directly influence the efficient functioning and effective operation of the complex, [9], [10], [11].

4 | Case Study of a Tourist–Recreational Complex Design

Table 2. A review of studies related to the design of tourism–recreational complexes with a focus on vernacular and sustainable architecture in Iran.

Row	Article Title	Year	Key Themes and Findings	Source
1	Designing the touristic-entertainment complex with the approach of the contextualized architecture in Rasht	2016	A study examining the design of a tourism–recreational complex in the Saqalaksar region of Rasht, with an emphasis on contextual architecture and principles of sustainability. Influential factors identified include visual attractiveness, the use of natural materials, green roofs, and solar panels. In addition, the natural landscape, views and visual corridors, architectural geometry, and accessibility were recognized as the most important determinants of tourist attraction.	[12]
2	Vernacular architecture as a resource for tourism	2021	A study on the design of a tourism–recreational complex with a vernacular architecture approach in Sari county. The research emphasizes the development of sustainable tourism, the integration of local culture, and addressing the seasonal challenges of tourism.	[13]
3	Fuzzy logic approach in the modeling of sustainable tourism development management	2019	An investigation of key factors in the design of ecotourism accommodations based on principles of vernacular architecture. The study emphasizes the use of local materials, climatic responsiveness, and cultural patterns to create sustainable and context-responsive tourism spaces.	[14]
4	Rural ecotourism planning and design based on SWOT analysis	2020	A focus on the impact of rural ecotourism in northern Iran, particularly in the provinces of Gilan and Mazandaran. The study examines design criteria for tourism complexes that are aligned with local culture, indigenous beliefs, and traditional architecture in order to strengthen sustainable development.	[15]
5	Residential, recreational and desert complex design with a concept-oriented architecture approach	2015	An analysis of trends in the design of recreational–residential complexes with a nature-oriented approach in northern Iran. The study highlights the use of vernacular patterns to ensure harmony with forests and coastal environments, and proposes sustainable spatial strategies for tourism development without causing harm to the ecosystem.	[16]

5 | Characteristics of a Tourist–Recreational Complex

Tourist–recreational complexes function as multifunctional environments and play a significant role in tourism development and in enhancing the quality of tourists’ experiences. The main characteristics of such complexes include the following:

5.1 | Functional Diversity of Spaces

These complexes comprise a combination of accommodation, recreational, cultural, service, and commercial spaces that are designed in an integrated manner to respond to the diverse needs of tourists.

5.2 | Harmony with the Natural Context and Climate

The design of tourist–recreational complexes should be adapted to climatic conditions, topography, vegetation, and environmental characteristics of the site, ensuring both environmental conservation and users’ thermal comfort.

5.3 | Strengthening Place Identity and Cultural Values

The use of vernacular architectural patterns, local materials, and regional cultural elements enhances a sense of place, improves spatial legibility, and creates an authentic experience for visitors.

5.4 | Quality of Open Spaces and Landscape

Open spaces, landscaping, natural views, and visual connections with the surrounding environment are key factors in attracting tourists and improving the overall spatial quality of tourist–recreational complexes.

5.5 | Accessibility and Spatial Legibility

Proper organization of access routes, clear circulation patterns, separation of pedestrian and vehicular movement, and respect for spatial hierarchy contribute to efficient functioning and ease of use.

5.6 | Emphasis on Sustainability Principles

Reducing energy consumption, utilizing renewable energy sources, water management, applying environmentally compatible materials, and minimizing environmental pollution are essential characteristics of sustainable tourist–recreational complexes.

5.7 | Responsiveness to Social and Economic Contexts

By creating employment opportunities, encouraging local participation, and strengthening the regional economy, tourist–recreational complexes play an important role in sustainable tourism development [9], [10], [11].

6 | Characteristics of Different Planning Types in Tourist–Recreational Complexes

The spatial organization and planning pattern of tourist–recreational complexes play a crucial role in functional efficiency, environmental integration, and the quality of users' experiences. Depending on site conditions, design objectives, and environmental context, different planning types can be identified as follows:

6.1 | Centralized Plan

In this layout, major functions are organized around a central core or focal space. This type enhances spatial cohesion, visual clarity, and ease of access, making it suitable for compact sites and high-density tourist activities. Centralized plans often promote social interaction and strong spatial identity.

6.2 | Linear Plan

A linear plan arranges spaces along a main axis, path, or natural feature such as a coastline, river, or mountain slope. This pattern supports gradual movement, clear circulation, and strong visual continuity, and is especially appropriate for elongated sites and landscapes with dominant natural directions.

6.3 | Cluster (Grouped) Plan

In cluster planning, functions are organized into smaller groups distributed across the site. This approach allows flexibility, reduces environmental impact, and improves adaptation to topography. It is commonly used in ecotourism and nature-oriented complexes where harmony with the natural environment is a priority.

6.4 | Radial Plan

The radial plan is formed by arranging spaces around a central point with radiating circulation paths. This layout provides efficient access to different functional zones while maintaining a strong sense of orientation and hierarchy. It is suitable for complexes that require clear zoning and controlled movement.

6.5 | Organic (Free-Form) Plan

Organic planning follows natural landforms, vegetation patterns, and climatic conditions rather than rigid geometry. This type strengthens the relationship between architecture and nature, enhances environmental sustainability, and is highly compatible with vernacular architecture and ecotourism principles.

6.6 | Hybrid Plan

Hybrid plans combine two or more planning patterns, such as linear–cluster or centralized–organic layouts. This approach allows designers to respond simultaneously to functional requirements, site constraints, and environmental considerations, making it one of the most flexible solutions for contemporary tourist–recreational complexes [17–19].

7 | Discussion

The design of tourist–recreational complexes is a multidimensional process that requires a simultaneous understanding of functional requirements, natural context, climatic conditions, and socio-cultural characteristics of each region. One of the most influential factors in the success of such complexes is the selection of an appropriate planning pattern and spatial organization, as the type of plan directly affects the quality of tourists' experiences, the degree of interaction with the natural environment, spatial legibility, and overall functional efficiency.

The analysis of various planning types—including centralized, linear, clustered, radial, organic, and hybrid plans—demonstrates that no single fixed pattern can adequately respond to all design conditions. Instead, the choice of a planning strategy should be based on site characteristics, project scale, types of tourism activities, and sustainable development objectives. Centralized and radial plans, with their emphasis on spatial order and ease of access, are more suitable for high-density complexes, whereas linear, clustered, and organic plans—due to their greater flexibility and environmental adaptability—are more appropriate for natural and ecotourism-oriented sites.

Moreover, the conscious integration of different planning patterns in the form of hybrid plans enables designers to achieve a balance between functional efficiency, environmental conservation, and the reinforcement of place identity. This approach is particularly valuable in regions with significant natural and cultural assets, such as northern Iran, where it can contribute to the revival of vernacular architecture, reduction of destructive interventions, and enhancement of the spatial quality of tourism complexes.

In conclusion, successful design of tourist–recreational complexes requires a holistic approach to planning and spatial organization—one that aligns users' needs with principles of sustainability, contextual design, and cultural identity. Such an approach not only enhances the attractiveness and efficiency of these complexes but also plays a significant role in promoting sustainable tourism development and improving the quality of the built environment.

7.1 | Conclusion and Proposed Optimal Design Pattern

Based on the analysis of theoretical foundations, climatic characteristics, and the evaluation of various spatial organization patterns, it can be concluded that no single planning pattern is capable of addressing all the design requirements of tourist–recreational complexes. However, in contexts similar to northern Iran—particularly Mazandaran Province—the Hybrid Cluster–Organic pattern can be proposed as the most appropriate design approach.

This pattern, on the one hand, follows natural landforms, vegetation, and climatic conditions, thereby enabling maximum adaptation to the environment. On the other hand, by organizing functions into spatial clusters, it maintains spatial legibility and functional coherence while preventing excessive concentration and inappropriate density. Such characteristics are particularly significant in humid and high-rainfall climates, where natural ventilation, spatial dispersion, and moisture reduction are essential.

From a cultural perspective, this pattern demonstrates the highest level of compatibility with the settlement patterns and spatial organization of the region's vernacular architecture. By reinterpreting dispersed and nature-oriented local settlement structures, it can contribute to strengthening place identity and creating an authentic experience for tourists.

Furthermore, the flexible structure of the cluster–organic pattern allows for phased development, minimizes destructive interventions in the natural context, and enhances sustainability indicators. Compared to centralized and radial patterns—which primarily emphasize concentration and density—as well as linear patterns, which offer less flexibility, this approach presents a significant advantage.

In conclusion, the application of the hybrid cluster–organic pattern as a context-oriented design strategy can effectively balance functional requirements, environmental considerations, and cultural values, ultimately contributing to improved spatial quality and the achievement of sustainable development in tourist–recreational complexes.

7.2 | Final Integrative Conclusion

The comparative diagram of spatial organization patterns demonstrates that each planning model—centralized, linear, clustered, radial, and organic—possesses distinct capacities and limitations across key performance criteria, including spatial legibility, environmental sustainability, user experience, and compatibility with the natural context. The findings clearly indicate that single-structure patterns are inherently limited in their ability to simultaneously address the multidimensional requirements of contemporary tourist–recreational complexes.

Complementarily, the process-oriented diagram elucidates the formation of an optimal design approach through a sequential and context-driven methodology. Beginning with comprehensive site analysis (topography, vegetation, climate, and accessibility), the process advances through functional zoning, spatial clustering, and the establishment of organic connections, ultimately integrating landscape and sustainability considerations into a coherent final masterplan. This stepwise framework highlights that spatial organization is not a predefined formal choice, but rather an emergent outcome of layered analytical and design decisions.

The synthesis of these two diagrams substantiates a critical theoretical position: the selection of an appropriate spatial pattern should be understood as a dynamic and adaptive process, rather than a static typological decision. Within this framework, the hybrid cluster–organic pattern emerges as the most effective strategy, as it simultaneously mediates between functional efficiency, environmental responsiveness, and cultural continuity. The clustered configuration ensures operational clarity and controlled spatial distribution, while the organic logic enables maximum adaptation to landform, climate, and ecological systems.

Furthermore, this integrated approach aligns closely with the principles of vernacular architecture, particularly in regions characterized by strong environmental and cultural identities, where dispersed settlement patterns and nature-oriented spatial structures have historically evolved in response to local conditions. By reinterpreting these indigenous logics within a contemporary design framework, the hybrid model not only enhances place identity but also minimizes ecological disruption and supports long-term sustainability.

In conclusion, the combined analytical and procedural evidence presented in these diagrams underscores the necessity of transitioning from pattern-based design toward process-driven, context-sensitive, and integrative design methodologies. Such an approach enables the creation of tourist–recreational complexes that are not only functionally efficient and visually coherent but also environmentally sustainable, culturally meaningful, and experientially rich—thereby contributing to a more resilient and holistic model of tourism development.

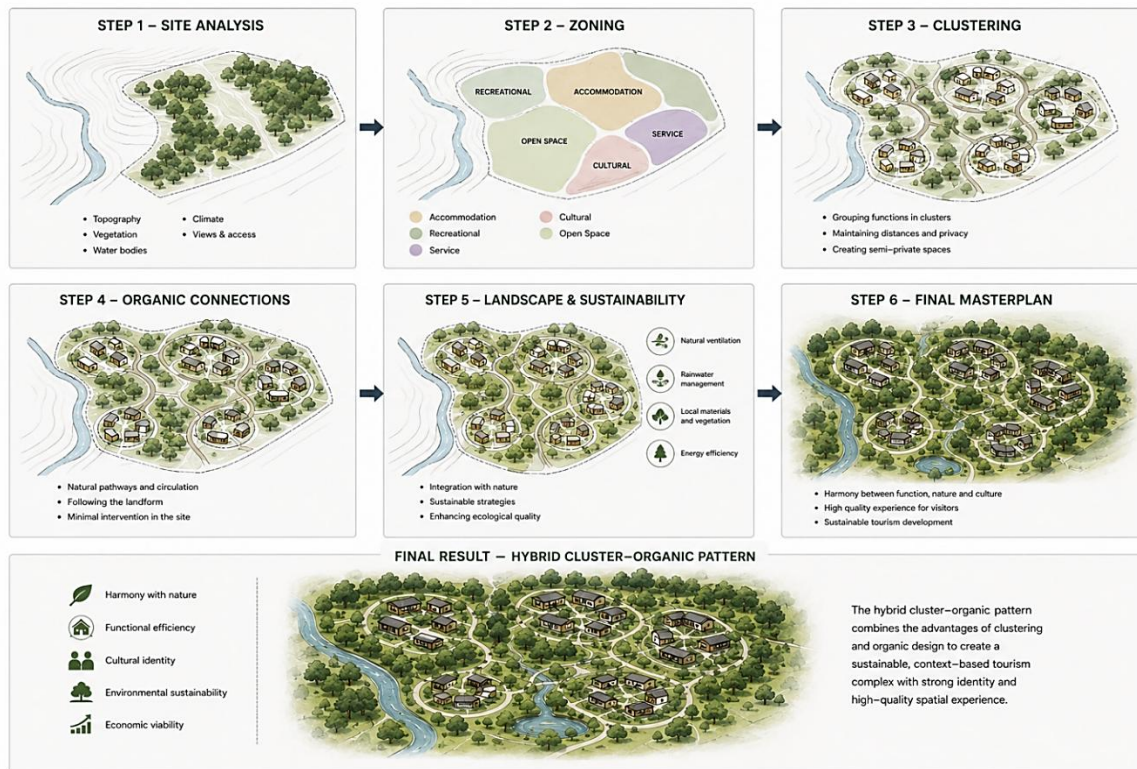


Fig. 1. Spatial organization patterns in tourist-recreational complexes and hybrid design framework.

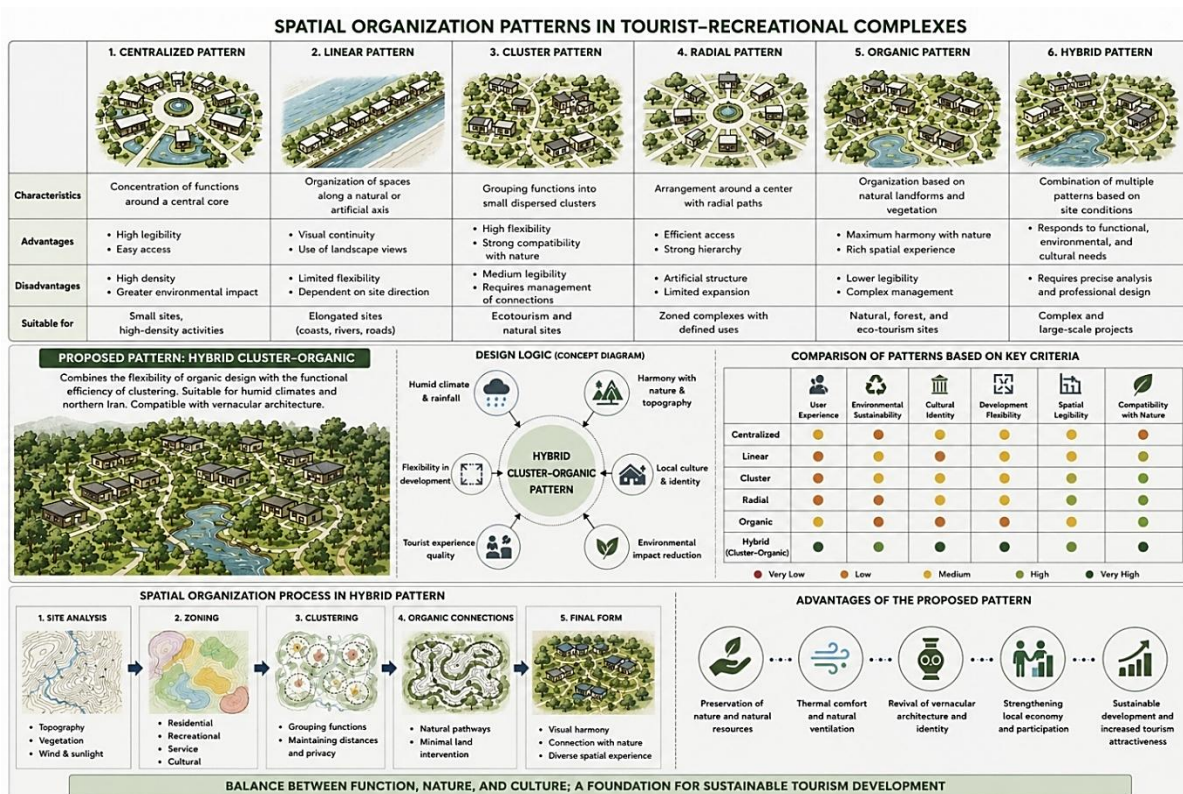


Fig. 2. Process-driven sustainable tourism design.

Authors' Contributions

The author solely conducted the research and prepared the manuscript and has approved its final version.

Data Availability

The data are available from the corresponding author upon reasonable request.

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There are no competing interests to declare.

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Ethics Approval and Consent to Participate

This article does not include experiments involving humans or animals.

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