Future Directions for Sustainable Tourism

Politecnico di Torino

A Case Study of Kohrang's Eco-Friendly Resort Village (Iran)

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l’abstract [IT]

Il turismo svolge un ruolo cruciale nello sviluppo economico e sociale di regioni con potenziale inesplorato. Questa tesi si concentra su un caso di studio che affronta la sfida di creare una destinazione turistica sostenibile e funzionale, rivedendo e ridisegnando un piano particolareggiato esistente per un sito di proprietà privata situato nel cuore delle Montagne Zagros, in Iran, con autorizzazioni comunali garantite. Nonostante i ricchi paesaggi naturali e il patrimonio culturale, molte di queste aree soffrono di un’infrastruttura turistica poco sviluppata che non si allinea alle loro capacità.

La tesi inizia esaminando il contesto più ampio del turismo e dell’ecoturismo, ponendo le basi per comprendere le sfide e le opportunità specifiche all’interno della regione target. Esplora i concetti fondamentali di ricreazione, svago e turismo, con un’enfasi sulla sostenibilità e sugli aspetti unici del turismo montano. La tesi analizza quindi le caratteristiche del caso di studio e il contesto regionale, inclusi la posizione del sito, i trasporti e i dati climatici, insieme a un’analisi SWOT. Una revisione completa del piano regolatore esistente, vecchio di un decennio, rivela notevoli carenze e difetti di progettazione. Queste intuizioni guidano lo sviluppo di un nuovo piano regolatore che abbraccia i principi di design sostenibile contemporaneo, meticolosamente adattato alle esigenze specifiche degli utenti e delle funzioni del sito. Il piano ridisegnato incorpora strategie microclimatiche e bioclimatiche, ottimizzando la funzionalità e l’armonia ambientale del sito.

Il piano proposto mira a risolvere le carenze del design originale, enfatizzando una funzionalità migliorata, la sostenibilità ambientale e una migliore integrazione con il paesaggio circostante. Questa nuova visione non solo cerca di elevare l’attrattiva del sito come destinazione turistica, ma assicura anche la conservazione dei suoi beni naturali e culturali.

I risultati di questa tesi contribuiscono con preziose intuizioni al campo dello sviluppo turistico sostenibile, dimostrando come un design informato e una pianificazione strategica—sintonizzati sia sulle esigenze degli utenti che sulle condizioni ambientali—possano trasformare regioni sottoutilizzate in fiorenti centri turistici ecocompatibili.

Abstract [EN]

Tourism plays a crucial role in the economic and social development of regions with untapped potential. This thesis focuses on a case study that addresses the challenge of creating a sustainable and functional tourism destination by revisiting and redesigning an existing master plan for a privately owned site in the heart of the Zagros Mountains, in Iran, with secured municipal permissions. Despite its rich natural landscapes and cultural heritage, this site suffers from underdeveloped tourism infrastructure that fails to align with its capabilities.

The Thesis begins by examining the broader context of tourism and eco-tourism, setting the stage for understanding the specific challenges and opportunities within the target region. It explores the foundational concepts of recreation, leisure, and tourism, emphasizing sustainability and the unique aspects of mountain tourism. The thesis then analyzes the case study’s characteristics and regional context, including site location, transportation, and climate data, alongside a SWOT analysis. A comprehensive review of the existing, decade-old master plan reveals significant shortcomings and design flaws. These insights drive the development of a new master plan that embraces contemporary sustainable design principles, meticulously tailored to the specific needs of the site’s users and functions. The redesigned plan incorporates microclimatic and bioclimatic strategies, optimizing the site’s functionality and environmental harmony.

The proposed plan aims to address the deficiencies in the original design, emphasizing improved functionality, environmental sustainability, and better integration with the surrounding landscape. This new vision not only seeks to elevate the site’s appeal as a tourist destination but also ensures the preservation of its natural and cultural assets.

The findings of this thesis contribute valuable insights to the field of sustainable tourism development, demonstrating how informed design and strategic planning—attuned to both user needs and environmental conditions—can transform underutilized regions into thriving, eco-friendly tourist hubs.

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INTRODUCTION

1.1. Topic Overview

Reviewing the historical development stages of many cities of Iran[1] highlights the reality that despite the simultaneous urban development with spatial growth and increasing construction, it has always been accompanied by the phenomenon of urban income generation. However, this spatial development has been fraught with many challenges regarding environmental quality.

To better understand this, we must pay attention to topics such as the greening of cities, the integration and synchronization of landscapes and urban perspectives, the disorderly urban sprawl, water pollution, air pollution, and the lack of green spaces and urban amenities. If we separately consider transport networks and the sometimes severe crises that arise in urban areas, we find many other urban problems such as traffic congestion and the chronic problems of today's cities, particularly large cities and the metropolitan areas.

Recreational spaces and tourism in these major cities, with appropriate standards of use and avoiding improper exploitation of recreational areas, can alleviate some of the urban issues such as the need for green spaces, reducing poverty, and alleviating the needs of city dwellers.

On the other hand, the rapid growth and urban development in large cities increases stress and pressure due to pollution, impacting human health and reducing overall well-being.

Today, the tourism industry and the importance of pristine and natural environments outside cities have drawn attention, and each country seeks to attract investment and resources into these areas. This is aimed at leveraging tourism and using these areas for recreational, economic, and tourism development purposes.

1. Iran, officially the Islamic Republic of Iran, also known by its Western-given name Persia, is a country in West Asia.

Given the above points and to meet the needs of the Iranian community, the strategic document for the development of the cultural heritage and tourism sector of Iran (2005-2025)[2] introduces quantitative and qualitative objectives, as well as tourism sector strategies. It proposes solutions for the development of tourism and ecotourism in the country[3].

One of the most important solutions is the identification and establishment of exemplary tourism areas in various provinces[4] of the country, with international, national, regional, and local approaches. The exemplary tourism area is one of the strategic proposals of the Cultural Heritage, Handicrafts, and Tourism Organization, which has been announced for the implementation of the provisions of the government plan.

Figure 1.1: Provinces of Iran

These areas are primarily located in the historical, cultural, and natural hubs of the country and are selected based on their potential and actual capabilities in historical, natural, and cultural fields, the level of tourist attraction, accessibility, and infrastructure. It has been decided that variable accommodation units for different social groups, will be built in these areas.

2. 2004 - The ninth government of Iran
2025 - The end date of the Thirteenth government of Iran

3. The country refers to Iran

4. Iran is subdivided into thirty-one provinces, each governed from a local centre, usually the largest local city, which is called the capital of that province.

Figure 1.1: Map of provinces of Iran, Own work

The approval of exemplary tourism areas in the country is among the successful strategies for promoting tourism culture and hospitality, organizing investments in the tourism sector, and leveraging the positive effects in various economic, social, cultural, and environmental dimensions.
The importance of exemplary tourism areas lies in the fact that they are established outside city limits, allowing investors to create tourism facilities without the need to obtain permits from government organizations.
These pleasant areas, situated away from the noise and stress of urban environments, cater to the essential human need for recreation and retreat into nature.

They possess multiple secondary values beyond their primary functional purpose, such as creating economic opportunities, generating employment, and establishing new functional zones in the field of land use planning. The identity and nature of these areas are unique and distinct based on each area's abilities and potentials, attracting different groups with varying tastes.

In today's world, especially in knowledge-based economies, tourism plays a very prominent and undeniable role in economic growth and development. It is characterized by its broad and diverse aspects, making it one of the most significant and noteworthy industries. Tourism is one of the largest and most popular commercial activities globally and is an integral part of third-generation industries. It stimulates other industries such as transportation, food services, hotels, tour agencies, and more, playing a crucial role in sustainable economic development.
In recent years, this industry has significantly focused on ecotourism. Among the various options within the global tourism system, ecotourism, with its inherent goals of environmental conservation, commitment to local communities, and respect for the cultural characteristics of host communities, is one of the planning options most compatible with the concept of sustainable development.

According to the latest data from the World Tourism Organization (UNWTO)[5], Iran's tourism sector experienced significant growth in 2023. Over five million foreign tourists visited Iran in the first 11 months of 2023, marking a 42% increase compared to the same period in 2022. This surge is particularly notable given the severe slump during the COVID-19 pandemic, when only 880,000 foreign tourists visited in 2021. By 2022, this number had risen to 4.11 million, indicating a strong recovery trend (UNWTO).

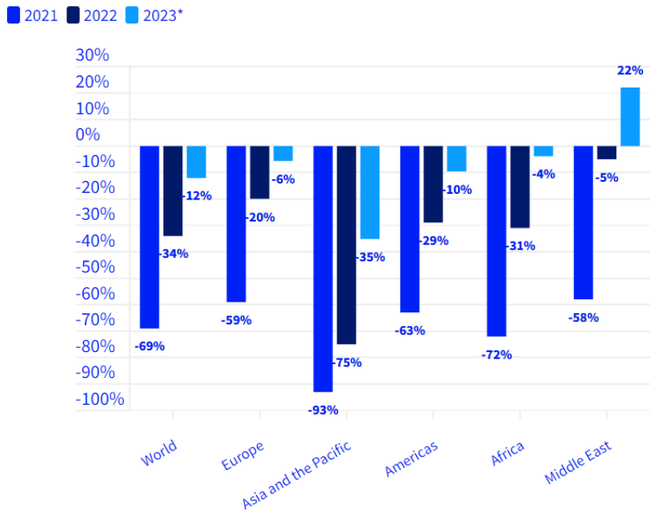


Figure 1.2: International Tourist Arrivals (% change over 2019)

5. United Nations World Tourism Organization: is the United Nations agency responsible for the promotion of responsible, sustainable and universally accessible tourism.

Figure 1.2: © UN Tourism - World Tourism Organization
% change over 2019
Preliminary figures, Data as collected by UN Tourism, January 2024.

Available data shows several destinations, including both large, established destinations as well as small and emerging ones, reporting double-digit growth in international arrivals in 2023 when compared to 2019. Four sub-regions exceeded their 2019 arrival levels: Southern Mediterranean Europe, Caribbean, Central America and North Africa.

UNWTO Secretary-General Zurab Pololikashvili says: "The latest UNWTO data underscores tourism's resilience and rapid recovery, with pre-pandemic numbers expected by the end of 2024. The rebound is already having a significant impact on economies, jobs, growth and opportunities for communities everywhere. These numbers also recall the critical task of progressing sustainability and inclusion in tourism development"

Ecotourism should play a central role in planning the national development of tourism in Iran, and due to the importance of this branch of the tourism industry, developing new plans to attract nature-loving tourists is one of the main needs of this industry. Ecotourism in Iran has more comparative advantages than other branches of tourism.

Cultural and historical tourism[6], although it has predominantly played a central role in Iran's tourism industry and has many and irreplaceable advantages, but it has a more limited market than others. It has the branches of tourism and creating a platform to attract nature tourists can play a significant role in the faster development of this industry in the country. Cultural tourism mainly attracts the elite and expert sections of society (such as archaeologists, etc.) and does not have a general audience.

Recreational[7] tourism is another branch of the big tourism market in the world, which according to social, moral and religious considerations is not capable of growth in Iran, and many of what is referred to as the negative consequences of tourism development are related to this branch of tourism, but ecotourism tourist, like cultural tourists, are often tourists who are not opposed to the social and religious norms of the host country, but rather observe them. The people of the communities should play an effective role.

When tourism has become a basis for creating ideas for recreation, employment and entrepreneurship, and in a more modern state, it has become an interconnected network of economic, social, civil, and cultural infrastructures; Creating exemplary tourism areas is a successful and worthwhile strategy in using Iran's tourism potentials.

6. According to the United Nations World Tourism Organization, cultural tourism is "movements of persons for essentially cultural motivations such as study tours, performing arts and cultural tours, travel to festivals and other cultural events, visits to sites and monuments, folklore or art, and pilgrimages."

7. Recreation : activities undertaken for leisure and enjoyment.

1.2. Site location:

The desired site is located at 50 degrees and 13 minutes of longitude and 32 degrees and 31 minutes of latitude and approximately one kilometer west of Dimeh village in the central part of the city (Kohrang) located on top of moorlands hill[8] overlooking Dimeh springs, the most important source of Zayandehrud River[9].

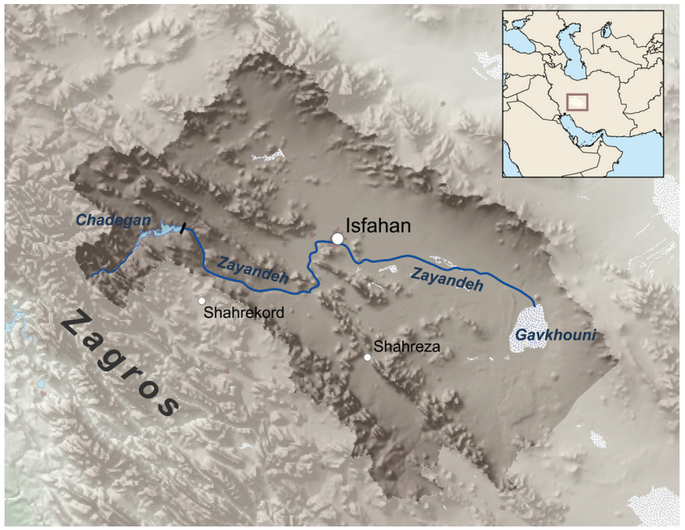


Figure 1.3: Zayandehrud river

In terms of relative location, it is located 9 km northeast of Chalgerd city, the city center (Kohrang) and 90 km northwest of Shahrekord, the provincial capital, adjacent to the asphalt communication axis and on the southern edge of the nomadic road (Haft Lang Bakhtiari nomads)[10].

Having a relatively central location compared to other tourist centers in Kohrang city, along with proper access through two communication axes in the province and extra-provincial axes, a space that can be developed, wide and diverse in the landscape.
The type of terrain and suitable topography along with proximity to residential centers have basic services including programmable spatial-positional parameters of the designed area, which increases land use capability with appropriate measures.

8. Moorland is a type of habitat found in upland areas in temperate grasslands, savannas, and shrublands and shrublands biomes, characterised by low-growing vegetation on acidic soils.
Moorland, nowadays, generally means uncultivated hill land, but also includes low-lying wetlands

9. The Zayandehrud river is the largest river of the Iranian Plateau in central Iran.
It flows 400 kilometres (249 mi) eastward

10. Haft Lang is one of the two branches of the Bakhtiari tribe whose history goes back to the 16th century and the taxation system. The dispersion of the residences of these two branches of the Bakhtiari tribe has caused differences, but both branches speak the Bakhtiari dialect.

Figure 1.3: Elevation data from SRTM, drainage basin boundary from USGS, all other features from Natural Earth. Defense Mapping Agency maps used as reference

1.3. Contextualization of the Case Study

The essence of tourism planning is the organization and design of leisure and tourist attractions in Chaharmahal and Bakhtiari provinces. This aspect highlights the social and cultural aspects of the issue.
In more precise words, the space should give a suitable response to the requirements of leisure, entertainment, sports and education with respect to environmental, cultural, social and economic considerations on a city, provincial and national scale.
The structure of this tourism project is that according to the existing potentials in Dime region, various approaches such as ecotourism and naturalism, historical, religious and commercial tourism will be included in it. Due to its location in the mountainous region and having dozens of natural tourist attractions as well as many historic monuments, Dimeh has been registered as a national monument.

Due to its special capabilities and locations, Dimeh region can accept various types of tourism and be chosen and welcomed by family tourists, educational recreation and ecotourists. Based on the statistics provided by the Cultural Heritage, Handicrafts and Tourism Organization of Chaharmahal and Bakhtiari Province, the number of Nowruz[11] travelers on the 14th day of Nowruz 2022 was about 3.2 million[12] people.

11. Nowruz is the Iranian new year or Persian new year. Historically, it has been observed by Persians and other Iranian peoples, but is now celebrated by many ethnicities worldwide.

12. 989,378 of the total number of passengers entering Chaharmahal and Bakhtiari during Nowruz holidays visited the historical, cultural and tourist attractions of this province.

Figure 1.4: Source of data QGIS, Iran: map and data

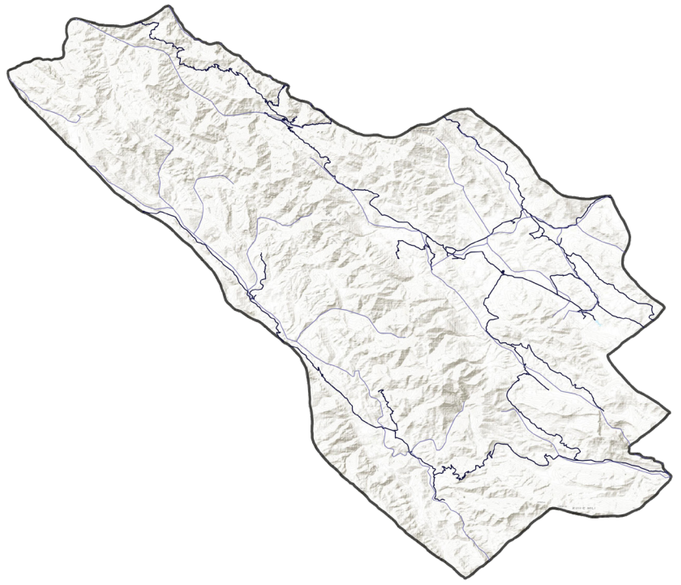


Figure 1.4: Kuhrang County topographic map

Therefore, in order to take advantage of the opportunities of the tourism boom in the region and improve the statistics of the region, it is necessary to pay attention to the goals and tastes of all kinds of tourists in order to attract them and create many attractions and potentials in the region's economy, so that everyone can visit the region with ease and use the infrastructure facilities of the region.

The World Travel and Tourism Council (WTTC) said Iran's tourism industry grew by 21 percent in 2023.[13]
Turkish tourists ranked second in visiting Iran after Iraqis. Despite a 45 percent drop in GDP share due to COVID-19 in previous years, Iran's tourism saw growth last year, as reported by IRNA.

The latest statistics of the World Travel and Tourism Council also showed that the share of the tourism industry in the total economy of Iran increased to 4.7 percent in 2023, slightly up from the previous year. In the same way, the value of this industry in Iran increased to $11.3 billion during the last year.

Tourism-related jobs in 2023 grew by 10.3 percent compared to the previous year. The number of people working in this industry was 1.6 million people. The share of the tourism industry in Iran's total employment in 2023 reached 6.6%. The WTTC has predicted that Iran's tourism industry will grow by 12.1% in 2024 and the value of this industry will reach $12.7 billion.

Statistics show that in addition to the boom in foreign tourism in Iran, the domestic tourism industry also grew well in 2023.

Foreign tourists spent $1.05 billion in Iran in 2023, which was an increase of 83.6% compared to the previous year. Iran's domestic tourists spent as much as $7.5 billion, about 18.7% growth compared to 2022, according to the WTTC data.

13. The data were collected from WTTC 2023

1.4. The necessities of this project

The necessity of carrying out this plan comes from the following:

• The growing need of the country for recreational spaces and outdoor natural spaces due to the strong acceptance of these areas by the people in recent decades and the need to respond to these needs.
• Compatibility of the plan with the roles defined for the region in the different plans.
• Anticipation of wide acceptance of the project by domestic and International tourists.
• Existence of economic security margin for planning and forecasting return of investment and profit from investment
• Necessity of building a platform and creating new job and economic opportunities in the plan for the economic development of directly benefiting urban areas of Chaharmahal and Bakhtiari[14] province and the city of Kohrang[15].

14. Chaharmahal and Bakhtiari province is one of the 31 provinces of Iran. It lies in the southwest of the country, with an area of 16,332 square kilometers. Its capital is Shahr-e Kord. At the 2022 census, the province's population was 1,026,108 people.

15. Kohrang is a visitable city in Chaharmahal and Bakhtiari province that embraces many spectacular attractions. This city is best-known as the roof of Iran and two main rivers of Zayanderud and Karoun originate from here.

Figure 1.5: Map of Iran and the location of Chaharmahal and Bakhtiari in the map, Own work

Figure 1.5: Chaharmahal and Bakhtiari location

Figure 1.6: Chaharmahal and Bakhtiari Province

• Necessity of environmental development of the project area in order to protect the water and soil resources, plant and animal life and ecological values of the area and improve the quality of life and residence in the neighboring areas and under direct influence (as environmental impact areas).
• The need to prevent the pollution of the water resources of the region due to the numerous and unorganized visits of the people

According to the above-mentioned goals, creating tourism model areas in Dasht-e Laleh[16], Dimeh[17], while responding to the leisure-recreational needs of the benefiting community, will result in significant economic feedbacks at the community level.

16. Dasht-e Laleh is a village in Dime Rural District, Kohrang County, Chaharmahal and Bakhtiari Province, Iran.
The meaning of Laleh from Farsi to English is the plant Tulip.
The meaning of Dasht from Farsi to English is the Plain.

17. Dime is a village in Chaharmahal and bakhtiari province.

Figure 1.6: Division of Chaharmahal and Bakhtiari, Own work

Among the functions of this attitude at the level of national and natural lands, we can mention the development research regarding the valuable environmental resources of the region; In this way, by creating the necessary platforms, suitable conditions for the growth and development of the plant and animal life of the region are provided, and in addition to their sustainable protection, the possibility of displaying and presenting them to the visitors is also provided. And this is something that has been given special attention in the design of this project. The uses related to this matter will actually include functions such as eco, museum, botanical garden, bird garden, aquarium, wildlife museum, and environmental education and research center, which will display The attractions and values of plant and animal biology, develop and spread the culture of environmental protection, and at the same time, it is a scientific and research center for conducting research on the protection and preservation of these values, relying on the activities of NGO[18] in the field of environment.

The approval of outstanding tourism areas can be the creator or driver of a developed process to achieve sustainable development in the border areas as well as the stability of local communities in all economic, social and cultural sub-branches as well as the tourism industry itself.

18. NGO - Non Governmental Organization: voluntary group of individuals or organizations, usually not affiliated with any government, that is formed to provide services or to advocate a public policy.

According to the above information, in order to improve the performance of the province[19], especially in Dime region and Kohrang city, which structurally, ecologically and spatially have been used for leisure time for a long time, it is necessary to use appropriate strategies and solutions. The development of rural tourism is increasingly felt according to the environmental conditions and characteristics and the attractions and ecological products (natural and human) of each region.

19. The province refers to Chaharmahal and Bakhtiari.

1.5. The Aims And Scope

The main goal of this project is to plan, organize and design a model tourism area with a provincial, national and international scale, including a functional, homogeneous, interactive and efficient system with suitable economic efficiency for the society and investors.
In order to play a role, leisure and tourism with functional environmental and socio-cultural considerations in order to spend leisure time and with the aim of improving the spiritual, physical and mental dimensions of the population benefiting from it and improving the environmental qualities of the project area, in the Kohrang area and next to the enchanting nature of Dasht-e Laleh and Dimeh. From this point of view, operational goals can be proposed in relation to the subject:

Environmental goals:

The main environmental objective of this project is to provide a physical plan and a design system in accordance with the environmental capabilities and capabilities of the project in order to preserve and prevent the destruction of the lands of the project area and to improve its environmental status in the ecological life of the directly affected area of the project in the cities of Kohrang and Dimeh. It can be pursued through the following objectives:

• Analysis of the capabilities and environmental characteristics of the substrate lands.
• Reducing the destructive role of development interventions on the land level located within the scope of the project.
• Management of natural and environmental resources within the scope of the project in order to protect environmental and ecological resources and plant and wild life.
• Preventing unauthorized grazing of livestock[20] in national and natural lands.
• Improving the role and ecological status of the lands within the project area in the ecological system of the directly affected area (Kohrang city and especially the ecological system of Cheshme Dimeh lands).
• Creating the necessary platforms for the sustainable protection of natural resources by the people.
• Creating the necessary platforms for the managed presence of people in national and natural lands in order to prevent the process of destroying the environmental resources of the region.

20. According to the estimates of the research center of the General Directorate of Natural Resources and Watershed in Chaharmahal Bakhtiari, this province has 1.1 million hectares of pasture, of which 37% are in average condition, 48% are in poor condition and 15% are very poor.

Based on the forecast and technical and scientific evaluation, the pastures of the province have the capacity to receive and graze 700,000 livestock units. But more than 3 times this amount of cattle (2.4 million) are from the pastures of Chaharmahal and Bakhtiari, which is a potential danger for the destruction of natural areas.

• Preventing soil erosion and destruction of pastures and water and soil resources in the region by implementing watershed management plans.
• The development of green spaces, including afforestation, tree plantations, etc., as well as water spaces, including waterways, ponds, and reservoirs, in order to purify the air and improve the environmental indicators of the project area.

Economic goals:

The macroeconomic goal of this plan is to increase economic interactions at the level of Chaharmahal and Bakhtiari province at the national and international level, and in this way the following operational goals can be pursued.

• Creating new job opportunities and increasing local income and reducing immigration and unemployment.
• The possibility of establishing a connection with the tourism system at the national level and mutual assistance to attract foreign tourists and diversity in the production of tourism products at the national level.
• Attracting capital and investors and earning currency.
• Increasing the level of welfare and the level of enjoyment of the native people.
• Creating suitable platforms for investors to return the profit from investment in the project platform.
• Development and expansion of private investment within the scope of the plan and injection of capital and financial resources to Chaharmahal and Bakhtiari.

Functional goals:

The main functional goal of this plan is to provide an optimal physical and functional program for the land in relation to the capabilities and limitations of the region in order to create an exemplary tourism region with an international national and regional scale in order to meet the needs and deficiencies in the areas of leisure and tourism. which will be achieved through the following operational goals:

• Analysis of the functional status of the site and its connections and interactions with neighboring functions and regional indicators.
• Improving the qualitative and quantitative level of the site's performance in comparison with its capabilities and limitations and in relation to and interaction with other spaces, leisure and sports functions available in the province and the country in different scales.

• Defining the spatial organization in accordance with the capacities of the site and the region at the strategic, detailed and executive levels and shaping the functional system defined for the region.
• Creating balance in the functional system of the region.
• Creation of worthy landscapes and views on the edge of the Dime spring and the arterial axis of Isfahan[21] - Shahr-e kord[22].
• Creating a new center for leisure activities in Chahar Mahal and Bakhtiari province with a national scale according to the existing shortages.
• Presenting development plans and plans and defining the spatial organization appropriate to the site in relation to its capabilities and functional capacity at different, strategic, detailed and executive levels.

Socio-cultural goals:

The main social and cultural goal of this research is to define the optimal socio-cultural system appropriate to the project area and project site, in relation to the demographic structure and social and economic situation of the users of the complex and to reduce anomalies and promote social norms at the internal and external levels related to the project site. And also creating new economic and job opportunities, in a way that includes positive economic feedbacks for the society and project investors, this will be pursued through the following operational goals:

• Review and analysis of the social, cultural and economic system governing the project area and the levels interacting with the project site in the current situation.
• Responding to the recreational needs of clients in order to restore physical, mental and spiritual strength.
• Improving quality and security control indicators and reducing social anomalies in the internal levels of the site.
• Improving the social and cultural indicators of clients and users of the collection and expanding and strengthening the collective spirit among them, through the prediction and establishment of the required social and cultural educational functions.
• Creating the necessary conditions for the proper use and exploitation of the collection by all citizens and compatriots as well as foreign visitors.
• Creating the necessary social and cultural contexts in order to prevent the destruction of the environment and the pristine natural space of the project area through the expansion and development of the culture of protection and preservation of the environment and the values of natural resources.

21. Isfahan is a city in central Iran, It is the capital of the province, the county, and the district with the population of: 1.9 million people.

22. Shahr-e Kord is a city in the Central District of Shahrekord County, Chaharmahal and Bakhtiari province, Iran.
Population: 315,980 people.

1.6. Methodology

Given the significance of this thesis, comprehensive information is crucial across various domains, including environmental, social, cultural, economic, physical, spatial, and regulatory aspects. Effective spatial planning and regional division are essential. Thus, a mixed-methods approach combining field observations, documentary research (textual, statistical, and image-based), and descriptive and analytical methods has been employed.

Data Collection:

• ***Field Observations:*** Conduct on-site visits to gather firsthand information on the current state of attractions, tourist facilities, services, and the overall impact of tourism in the area.

• ***Documentary Research:*** Review existing texts, statistical data, and images to understand the historical and current context of the region.

Assessment:

• ***Analyze the gathered data*** to identify key attractions, current tourism facilities and services, and assess the impact of tourism on the local environment, culture, and economy.

Modifying the Master Plan:

• Based on the initial assessment, modifying the master plan with necessary changes identified during the study. Avoid major alterations, focusing instead on adjustments that align with the new findings and project goals.

Design Proposals for Key Sectors:

• ***Public Spaces:*** Design public spaces that cater to both tourists and locals, promoting social interaction, cultural exchange, and community events.

• ***Green Spaces:*** Plan the development and preservation of green spaces to enhance the natural beauty of the area, provide recreational opportunities, and support biodiversity.

• ***Private Spaces:*** Ensure private spaces are developed in harmony with the local environment and cultural heritage, offering comfortable and sustainable accommodations for visitors and locals.

Thesis Implementation:

- ***Optimize Existing Situation:*** Enhance current facilities and infrastructure to better support tourism and meet the needs of residents.
- ***Increase Tourism and Services:*** Develop new tourist attractions and services to draw more visitors and provide a richer experience.
- ***Physical Infrastructure:*** Improve physical infrastructure, such as roads, public transport, and utilities, to support increased tourism and benefit local residents.
- ***Economic Development:*** Boost local income through tourism-related activities and businesses.
- ***Local Training and Employment:*** Train and employ local residents, raising cultural awareness and providing economic benefits to the community.

Ownership and Project Resumption:

Initially a governmental project by the municipality, ownership has shifted to the private sector. After a hiatus of several years, the project is now resuming. The revised methodology considers this change in ownership, ensuring collaboration between private stakeholders and local authorities to achieve the project's goals.

Conclusion

By combining field observations, documentary research, and analytical methods, our thesis aims to create a sustainable, culturally respectful, and economically beneficial tourism model. The modified masterplan and sector-specific proposals will ensure that the development aligns with the region's unique characteristics and the needs of its residents and visitors.

1.7. Structure of thesis

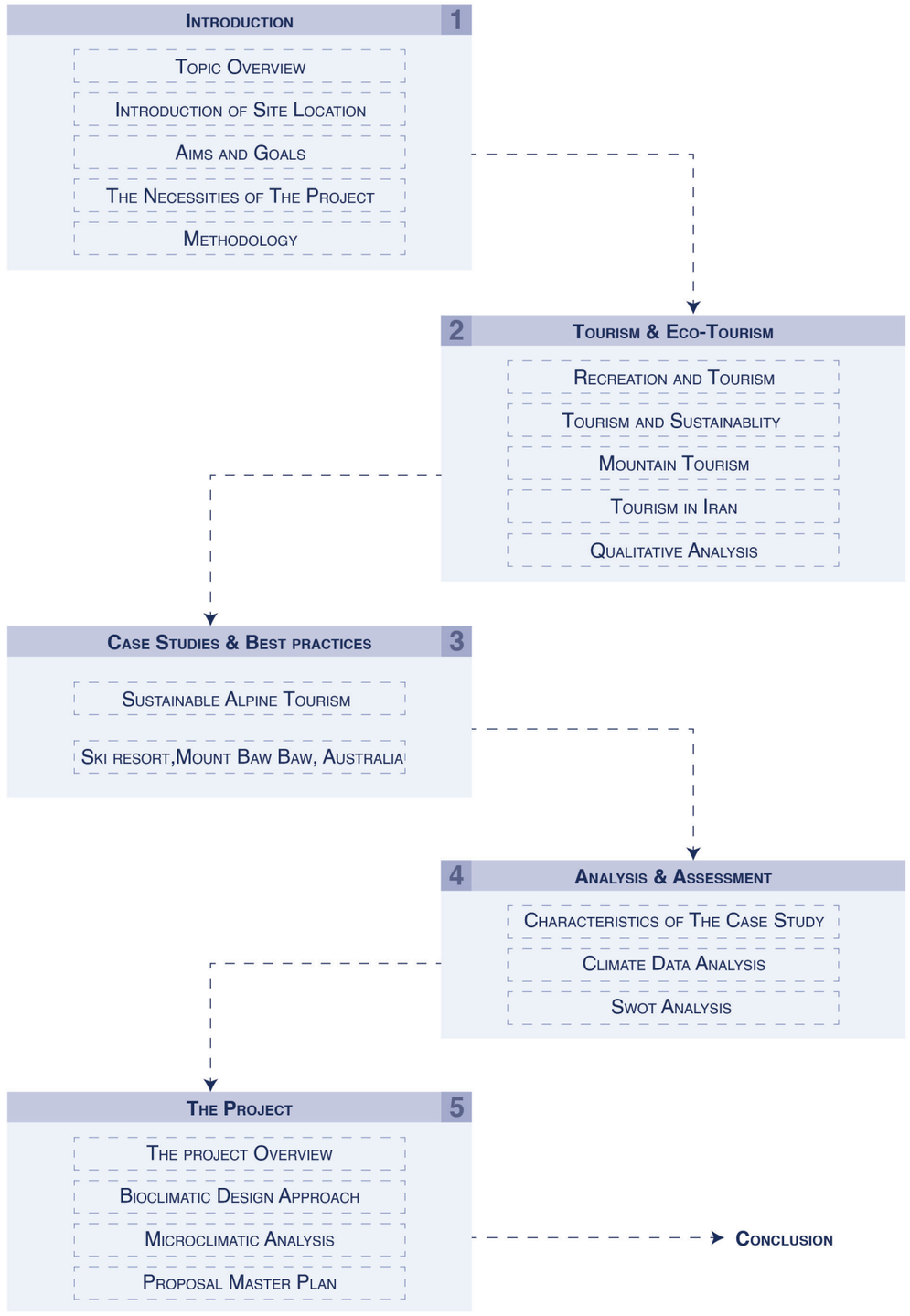


Figure 1.7. (Find on next page)
Structure of the thesis.

02/

TOURISM AND ECO-TOURISM

2.1. Recreation and Tourism

“Although the outward rationale for tourism has as many variations as there are tourists, the basic motivation seems to be the human need for recreation.” [1]

2.1.1 Introduction

In the quote above, Graburn highlights the significance of recreation as a key factor behind leisure travel. Other authors, like Jansen-Verbeke and Dietvorst (1987)[2], and Edginton (1980)[3], have also suggested that, from an individual’s perspective, there is little difference between leisure, recreation, and tourism activities.

This chapter focuses on the individual, highlighting the lack of discussion on concepts and practices common to both recreation and tourism. It prepares for a deeper exploration of tourism as a form of recreation by looking at several models that have roots in both fields.
This is followed by a discussion on recreation programming as a key part of recreation planning, compared to the approach of developing tourism products. The importance of service is emphasized, showing how planning recreation programs can enhance tourism services and improve the tourism industry, just as it has in the recreation industry.

1. Graburn, (1989), p. 36; Tourism: The Sacred Journey.

2. Jansen-Verbeke, M. and Dietvorst, A. (1987) Leisure, recreation, tourism

3. Edginton, C.R., Compton, D.M. and Hanson, C.J. (1980) Recreation and Leisure Programming: A Guide for the Professional. Saunders, Philadelphia.

2.1.2. Leisure, Recreation and Tourism

Despite people feeling familiar with leisure in their daily lives and knowing when they are experiencing it, defining the concept has been challenging. Objectively, leisure can be identified as time spent on activities not related to work. Subjectively, leisure happens when a person feels at leisure, even if others might feel differently during the same activity. Leisure is often defined by time, activity, and experience.

As a measure of time, leisure includes any activities done during the day that are free from obligations like work, household chores, and family responsibilities. As an activity, leisure includes pursuits that are physical, intellectual, social, imaginative, reflective, creative, or emotional (Kelly and Godbey, 1992)[4].

As an experience, leisure involves feelings of satisfaction and excitement, based on personal perceptions, thoughts, and values (Csikszentmihalyi, 1975)[5]. One strong argument for an experiential definition of leisure comes from Neulinger, who suggested an attitudinal approach with two main factors.

One of the most convincing arguments for an experiential approach to defining leisure has been presented by Neulinger[6], who proposed an attitudinal framework for leisure involving two main agents.

The first factor, perceived freedom, is about whether the activity is freely chosen or constrained. The second factor, intrinsic motivation, concerns the rewards from participation, whether they are internal, like enjoyment from the activity itself, or external, such as gaining approval from others or earning money.

4. Kelly, John R. & Geoffrey Godbey. (1992). The Sociology of Leisure.

5. Csikszentmihalyi, M. (1975). Play and intrinsic rewards. Journal of Humanistic Psychology,

6. Neulinger, J. (1974). The psychology of leisure: Research approaches to the study of leisure.

The typical example of this 'leisure as a state of mind' approach is when someone at work feels a strong sense of freedom and control over their tasks, driven by inner motivation to get the job done. From this viewpoint, their work seems more like a leisure activity compared to someone else who feels limited by their boss and time constraints, lacking that internal drive.

Understanding the concept of recreation has been just as tricky, especially considering how both terms are commonly used. Recreation is often seen as part of leisure, meaning that while all recreation can be seen as leisure, not all leisure activities qualify as recreation.

Tourism is different from recreation and leisure when it involves work-related purposes. Specifically, Mieczkowski (1981)[7] suggested that non-recreational travel includes trips for business, family gatherings, and health and professional reasons.

7. Mieczkowski, Z. (1981). Geography of Tourism

Figure 2.1. Mieczkowski, (1981), cited in Murphy, 1985.

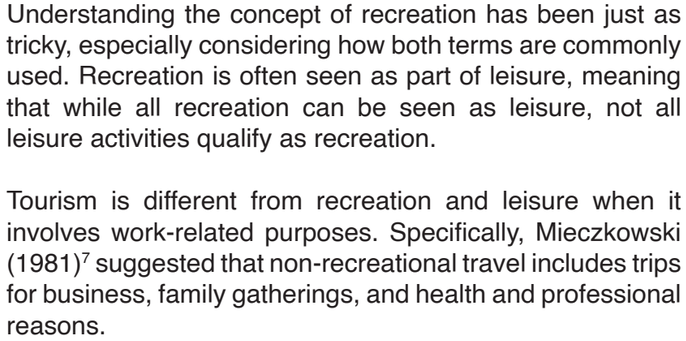


Figure 2.1: Leisure, recreation and tourism

2.1.3. Disciplinary links

The definitions and models of tourism vary, ranging from purely economic to psychological, spatial, or temporal perspectives. Some models combine multiple variables, forming comprehensive 'whole systems' models that address the movement of tourists from their originating region to their destination region and back, as well as the industry supporting their activities across diverse environments.

Space emerges as a crucial factor in distinguishing tourism from other recreational activities. The significance of space in defining travel is evident in definitions provided by countries like Canada and the USA, which define a tourist based on the distance traveled away from their usual residence or workplace. This text aligns with the guidelines set by the World Tourism Organization (WTO), which defines a tourist as someone who travels outside their usual environment for at least one night but not more than six months, with the main purpose of the visit being other than engaging in paid activities within the visited country.

Mathieson and Wall (1982)[8] also considered various variables in describing tourism and tourists, emphasizing the dynamic nature of travel and the implications of the stay at the destination. They further expanded on these elements by highlighting the consequential aspect, which underscores the diverse effects or impacts on the economic, physical, and social systems directly or indirectly linked to the tourist. This model effectively illustrates the characteristics of tourists and destinations that can influence the frequency and severity of impacts within a region.

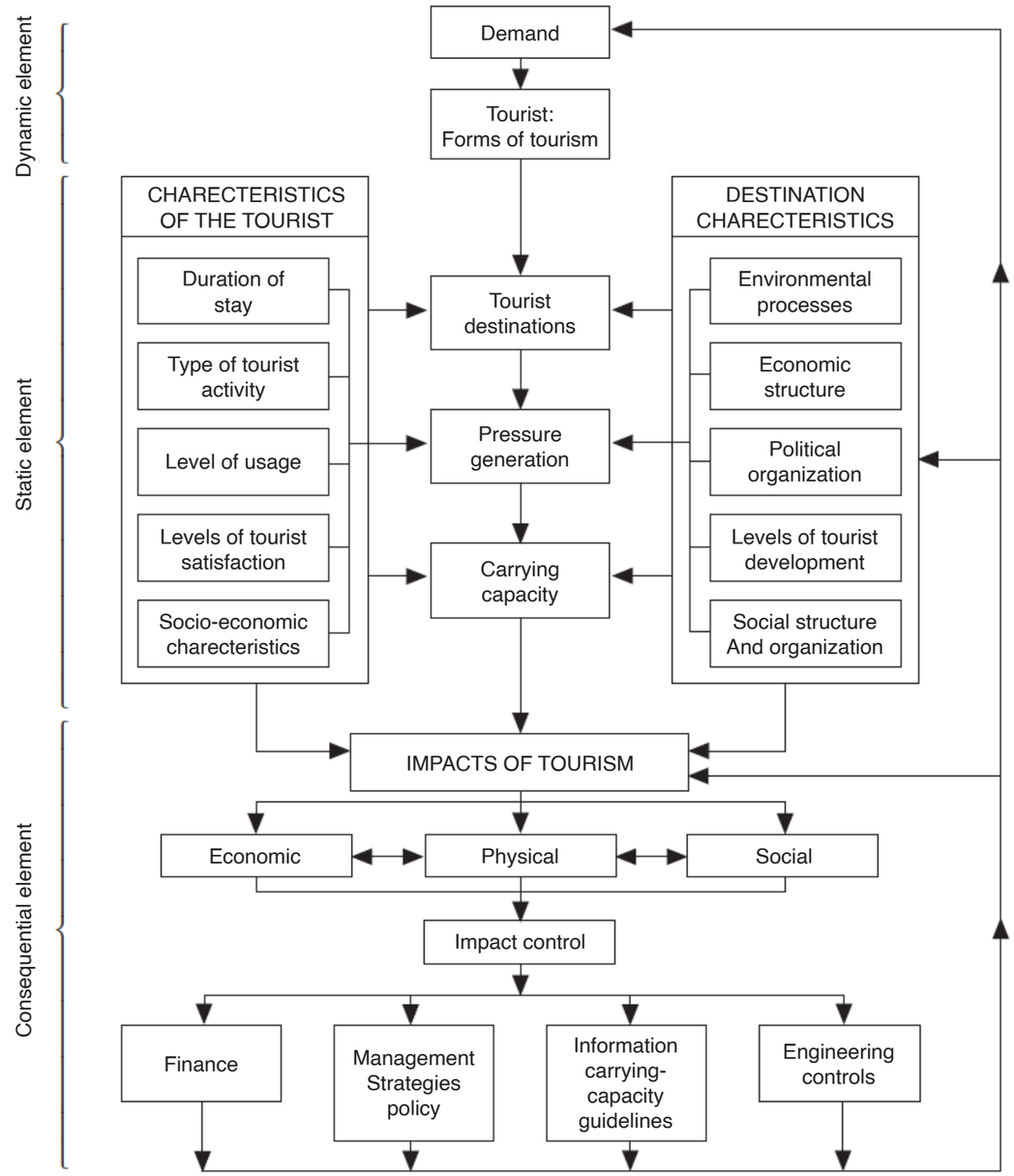


Figure 2.2. A conceptual framework of tourism. Mathieson, A., & Wall, G. (1982).

8. Mathieson, A., & Wall, G. (1982). Tourism: Economic, physical, and social impacts.

2.1.4. Tourism products

Typically, a product is considered to be a physical item, like a car or a watch. However, a product encompasses more than just tangible objects. For instance, marketers often use the term “goods and services” to differentiate between physical products and intangible ones: goods are items produced, while services are actions performed.

In the tourism industry, providers mostly see their offerings as services, recognizing that they cannot be stored and must be consumed as they are provided. Conversely, tourists perceive the product more as a service because experiences are immediately consumed on-site, without the possibility of taking home any tangible product associated with the experience.

Tourism products may be more easily understood through the following nine points, as outlined by Bécherel (1999)[9]:

- ***Intangibility.*** It involves experiencing something rather than acquiring a physical object.
- ***Perishability.*** Items like hotel nights and airline seats cannot be stored for future use and are lost if not utilized.
- ***Inelasticity of supply.*** TTourism services do not easily adjust to changes in short- and long-term demand.
- ***Elasticity of demand for tourism products.*** Demand for tourism services quickly responds to events and environmental changes such as crime, economic downturns, and shifting trends.
- ***Complementarity.*** The tourism product comprises multiple interconnected sub-services, which can impact each other positively or negatively.
- ***Inseparability.*** Production and consumption occur simultaneously. Tourists must be present during the service provision to consume it.
- ***Heterogeneity.*** It’s nearly impossible to create two identical tourism services. Variations in service, such as hotel rooms or tours, are inevitable.
- ***High fixed costs.*** The initial investment in essential elements of the tourism product, like accommodation and transport, is substantial. This involves significant financial risk without a guaranteed return.
- ***Labour intensity.*** It requires well-trained and prepared employees to work towards positive outcomes. Often, there’s a high staff-to-client ratio to ensure satisfactory experiences.

9. Bécherel (1999). The International Marketing of Travel and Tourism.

Interestingly, the products offered by industry providers may differ from those perceived as in demand by consumers. While tourists may have a broader view of the tourism product they’re purchasing, individual suppliers may segregate their offerings from the broader ‘industry.’

To this end, several sectors are commonly recognized as comprising the tourism industry. These include:

- Carriers
- Accommodation
- Attractions
- Travel agencies
- Food and beverages
- Tour operators
- Merchandisers
- Public or private sector support services

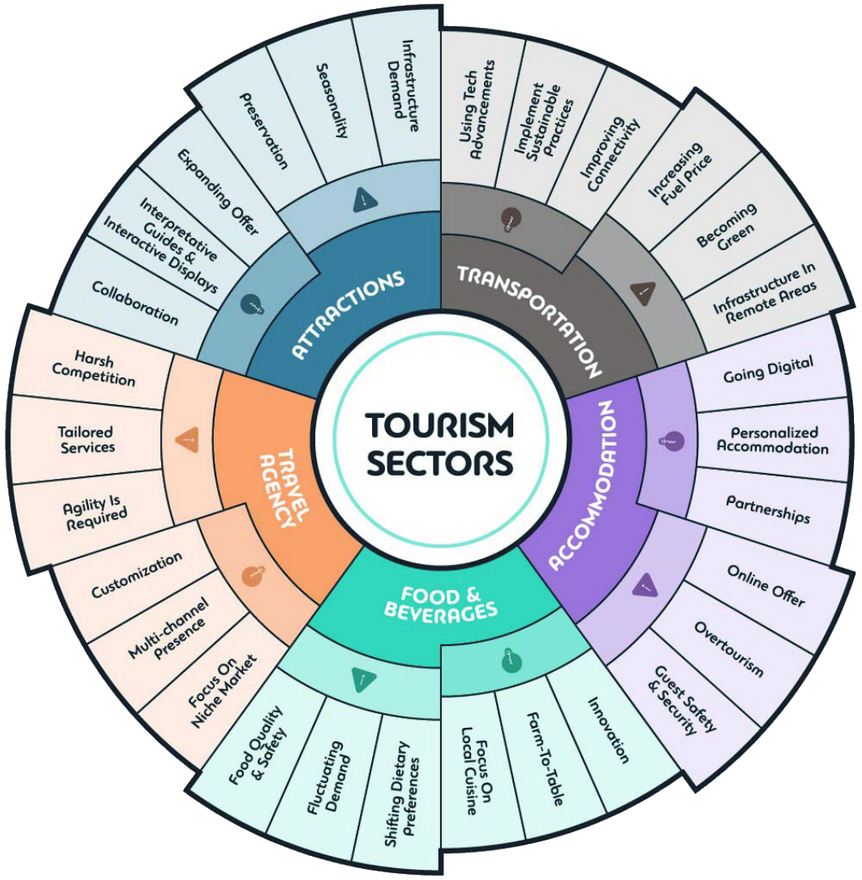


Figure 2.3: Challenges and Opportunities in each sector

2.2. Sustainability

The emergence of mass tourism in the latter part of the 20th century coincided with the surge of the global environmental movement. As more tourists began visiting natural areas, it became evident that tourism development would eventually clash with environmental concerns due to the increasing negative impacts of mass tourism. This clash came to a head in the 1980s, drawing significant attention from disillusioned environmentalists who opposed the rapid growth and resulting environmental degradation.

In response to these challenges, the World Commission on Environment and Development (WCED) released a landmark report titled Our Common Future, commonly referred to as the 'Brundtland Report' after its chairperson, Gro Harlem Brundtland, who was the Prime Minister of Norway at the time (WCED, 1987).
The report examined critical global environmental and developmental issues, concluding that sustainable use of environmental resources is essential for long-term economic growth. This led to the popularization of the term 'sustainable development,' which quickly became a guiding principle in global development efforts. The report outlined five fundamental principles of sustainability (Bramwell and Lane, 1993)[10]:

• Emphasis on holistic planning and strategic decision-making.
• Importance of preserving essential ecological processes.
• Necessity to protect both human heritage and biodiversity.
• Focus on development that ensures long-term productivity for future generations.
• Goal of achieving greater equity among nations.

10. Bill Bramwell & Bernard Lane (1993) Sustainable Tourism: An Evolving Global Approach.

2.2.1. Tourism and Sustainability

During the 1980s, several proponents, such as Mathieson and Wall (1982)[11] and Farrell and McLellan (1987)[12], emphasized the connection between tourism and sustainability. They proposed integrating the environment and tourism to uphold environmental integrity and promote successful tourism development.
Additionally, they put forward the idea that a symbiotic relationship between tourism and the natural environment represents one aspect of a dual concern. The first concern involves integrating both physical and social systems into the broader context.
Their argument for a more comprehensive perspective was advanced by the necessity of incorporating community concerns and participation in tourism development, as argued by Murphy (1983 [13], 1985 [14]), describes this integrated approach as one where "resource assets are so closely linked with tourism that anything harmful to them is detrimental to tourism."
Conversely, advocating for environmental conservation generally aligns with supporting tourism. This perspective has started to influence tourism as a whole, and specifically ecotourism, in recent decades.

The fundamental idea behind sustainable tourism development is to align tourism growth with ecological and social responsibility. Its goal is to satisfy the current needs of tourists and host communities while safeguarding and enhancing environmental, social, and economic values for the future.
Sustainable tourism development aims to manage all resources in a manner that addresses economic, social, and aesthetic needs while preserving cultural integrity, essential ecological processes, biological diversity, and life support systems.

11. Mathieson, A. and Wall, G. (1982). Tourism: Economic, Physical and Social Impacts.

12. Farrell, B., & McLellan, R. (1987). Tourism and physical environment research.

13. Murphy, P.E. (1983) Tourism as a community industry: an ecological model of tourism development.

14. Murphy, P.E. (1985) Tourism: a Community Approach.

According to GLOBE 90[15], the objectives of sustainable tourism include:

1. Increasing awareness and appreciation of tourism's important role in supporting the environment and the economy.
2. To promote equity in development.
3. improve the quality of living of the local residents.
4. Ensuring visitors have outstanding experiences.
5. Preserving the environment that supports these goals.

Attaining the fifth goal of environmental conservation involves ensuring fairness across generations in conserving resources. This entails avoiding irreversible environmental actions, implementing measures to mitigate or rehabilitate degraded environments, encouraging responsible environmental practices and activities, and collaborating to establish and achieve environmentally sustainable tourism practices.

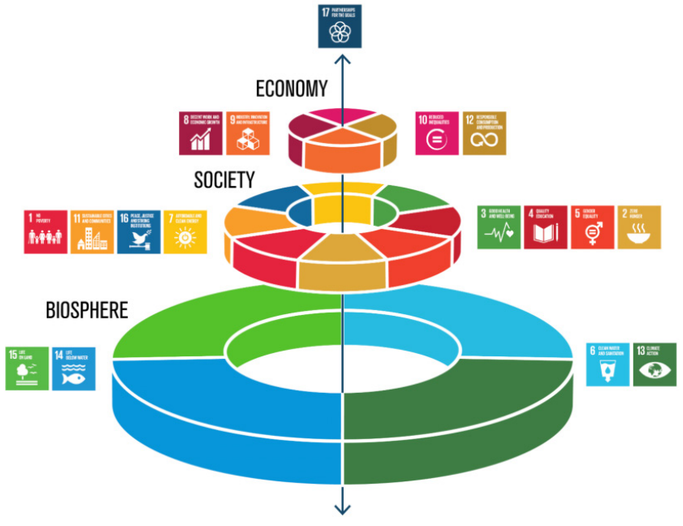


Figure 2.4: Guide to the global goals

15. Global Learning and Observations to Benefit the Environment.

Figure 2.4. Azote Images for Stockholm Resilience Centre 2016

2.3. Mountain Tourism

The emergence of different tourism types in recent decades, like ecotourism, nature-based tourism, alternative tourism, and small-scale tourism, reflects a heightened awareness of environmental issues.
This awareness is also connected to the growing interest in ecosystems deemed fragile or susceptible to human impacts, including tourism.

The global significance of preserving such fragile ecosystems was formally recognized at the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro in 1992. At this conference, two chapters in (Agenda 21)[16], the action plan for the 21st century endorsed by the majority of the world's nations, focused on managing these ecosystems: Chapter 12 addressed dryland ecosystems, while Chapter 13 focused on mountain ecosystems.

Chapter 13 of Agenda 21, titled 'Managing Fragile Ecosystems: Sustainable Mountain Development,' underscores the critical significance of mountain ecosystems on a global scale. It emphasizes the necessity to protect these ecosystems and promote sustainable development in mountain regions.

The chapter highlights the vital role of mountains in global sustainability and advocates for the responsible management of mountain resources and the socio-economic well-being of mountain communities.
It outlines two main program areas: (i) enhancing knowledge about the ecology and sustainable development of mountain ecosystems, and (ii) fostering integrated watershed development and alternative livelihood opportunities.

16. Agenda 21 is a non-binding action plan of the United Nations with regard to sustainable development.

2.3.1. Mountain on Global Agendas

During the 1990s, there was a notable increase in initiatives focusing on mountain tourism. Among these initiatives was the regional project led by the International Centre for Integrated Mountain Development (ICIMOD), as outlined by Sharma (1998)[17] in one of several recent publications dedicated specifically to mountain tourism.

Mountains have gained significant attention on global agendas not solely due to their significance for tourism, although the experiences of visitors to mountain areas have certainly contributed to raising global awareness.
"24% of the Earth's landmass can be considered mountainous"[18] and provides crucial resources to over half of the world's population.
The gene banks containing mountain species, whether they are naturally occurring or cultivated, serve as crucial resources for human health and survival both now and in the future. Additionally, mountains provide other essential resources such as those used in agriculture, forestry, and mining.

Isolation, along with limited communication and diverse migration patterns, has enabled mountain communities to preserve many of their traditional ways of life for generations. As a result, these communities have typically experienced slower rates of cultural change compared to those in lowland regions.
However, recent years have seen an acceleration in cultural change due to increased accessibility and greater integration into regional and global markets.
In many parts of the world, mountain people have been able to maintain valuable local folk knowledge and traditions, including language, folklore, crafts, religion, healing methods, and natural resource management practices.

The rich cultural diversity found in mountain regions enhances human understanding and practices. Mountains serve as cultural repositories in other significant ways as well. As Bernbaum (1997)[19] eloquently describes, mountains are also spiritual centers, places of power, homes to deities, sites of worship, paradises, dwellings of divine ancestors and the deceased, and sources of blessings, inspiration, revelation, and transformation.

17. Sharma, B, (1998). Mountain Tourism for Local Development

18. This can be further broken down by region. The largest mountainous coverage is found in Eurasia, where 33% of the area is covered by mountains. This is followed by North America (24%), South America (19%), and Africa (14%).
Source: Worldatlas

19. Bernbaum, E. (1997). Sacred mountains of the world.

Figure 2.5: As spiritual centres, mountains often provide a place of meditation and worship, Tomb of Khaled Nabi, situated in the Gokcheh Dagh hills of the Turkmen Sahra in Golestan, Northern Iran

2.3.2. Mountains of the World

Mountains cover about 24% of the world's land and are found on every continent and in all major ecosystems, from deserts and tropical forests to polar ice caps (see map on the next page).

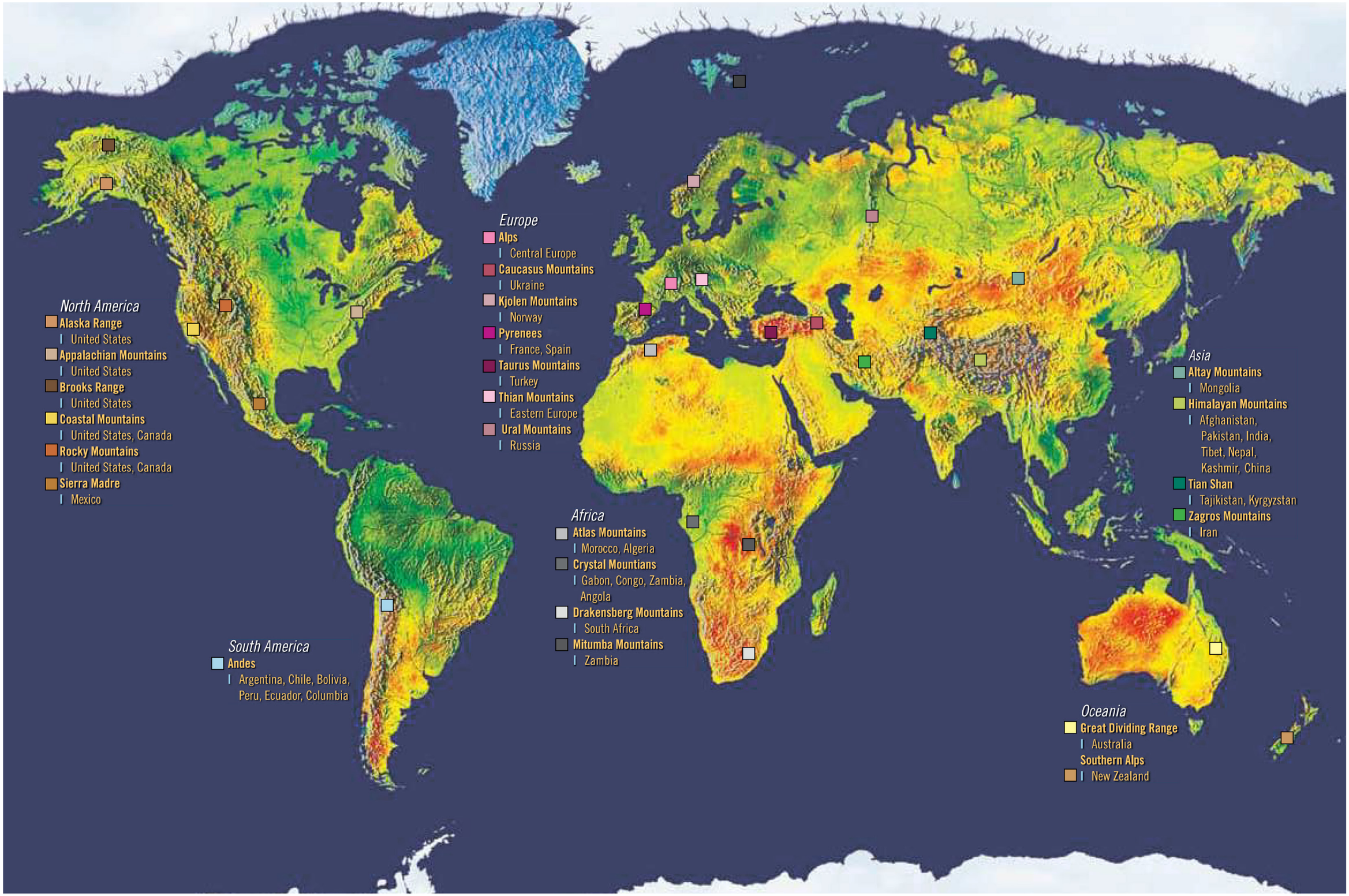
All mountains share a key feature: rapid changes in altitude, climate, vegetation, and soil over short distances, which create big differences in habitats and high levels of biodiversity. Mountain weather can be unpredictable, and rainfall varies widely.

Because of these varied conditions, defining a mountain is difficult. Generally, mountains are over 300 meters (984 feet) high, but it's better to think of them in terms of areas with similar elevation, slope, and vegetation. Usually, mountains have three zones: montane, subalpine, and alpine.

Each zone has a unique set of plant and animal species, many of which are found only in that specific area.

Figure 2.5. Photo by Jakob Fischer

Figure 2.6. (Find on page 42-43) Tourism and Mountains. A Practical Guide to Managing the Environmental and Social Impacts of Mountain Tours. (2016). Source: UNEP


North America
Alaska Range
United States
Appalachian Mountains
United States
Brooks Range
United States
Coastal Mountains
United States, Canada
Rocky Mountains
United States, Canada
Sierra Madre
Mexico
Europe
Alps
Central Europe
Caucasus Mountains
Ukraine
Kjolen Mountains
Norway
Pyrenees
France, Spain
Taurus Mountains
Turkey
Thian Mountains
Eastern Europe
Ural Mountains
Russia
Asia
Altay Mountains
Mongolia
Himalayan Mountains
Afghanistan, Pakistan, India, Tibet, Nepal, Kashmir, China
Tian Shan
Tajikistan, Kyrgyzstan
Zagros Mountains
Iran
Africa
Atlas Mountains
Morocco, Algeria
Crystal Mountians
Gabon, Congo, Zambia, Angola
Drakensberg Mountains
South Africa
Mitumba Mountains
Zambia
South America
Andes
Argentina, Chile, Bolivia, Peru, Ecuador, Columbia
Oceania
Great Dividing Range
Australia
Southern Alps
New Zealand

2.3.3. Tourist's motivations

Whether driven by religious or secular motivations, mountains are significant destinations for travelers. After coastal regions, mountains rank second in global popularity as tourist destinations (Mieczkowski, 1995)[20]. Tourists are drawn to mountains for various reasons. Besides seeking a sense of renewal and spiritual well-being, the surge in lowland populations and overcrowding in urban centers also contributes to the popularity of mountain tourism. People seek to escape urban pollution, noise, crime, and related stresses by turning to the serenity and relative calm of mountain environments.

Another motivation is the pursuit of adventure and participation in recreational sports. Activities like snowshoeing, downhill and cross-country skiing, and hiking have been enjoyed for over a century. More recently, heli-skiing, snowboarding, and snowmobiling have become popular winter attractions in the mountains. In other seasons, tourists engage in trekking, camping, climbing, rafting, kayaking, canoeing, and mountain biking.

Additionally, while opportunities for these recreational sports have long attracted people to local destinations, they now form part of a global market catering to those with more leisure time, greater economic security, and more efficient travel options. For instance, some skiers and snowboarders pursue their sport year-round, traveling from one hemisphere to the other.
This phenomenon has been made possible by lower airfares and an increasing number of airports located near and in mountain regions.

20. Mieczkowski, Z. (1995). Environmental issues of tourism and recreation.

2.3.4. Impacts of Tourism in Mountain Areas

Tourism can affect mountain ecosystems, communities, and economies in many ways. While there are several negative impacts, tourism can also bring positive outcomes like promoting peace, boosting pride in cultural traditions, creating local jobs to prevent urban relocation, and increasing awareness and appreciation of natural, cultural, and historical sites.[21]

- **Environmental Impacts**

"Mountain landscapes are very delicate and can easily be changed or damaged. Natural events like landslides, avalanches, lava flows, earthquakes, torrents, and rock falls can suddenly change the landscape. Mountain ecosystems have many small and unique habitats with plants and animals that have short growing and reproductive seasons and are very sensitive to human activity.

Tourism often involves building and heavy use of tracks, paths, and sports slopes by vehicles, non-motorized transport, and pedestrians. Visitors are usually concentrated in small areas, leading to more noise and waste.
Poorly managed tourism can result in clearing vegetation, soil erosion, loss of habitats, changes in landscapes and water flows, water and air pollution, and changes in wildlife behavior. Introducing exotic and invasive species and diseases can also greatly harm local plant and animal species.

However, tourism can also have positive environmental impacts. It can raise awareness and appreciation of the natural environment, leading to conservation efforts and sustainable practices. Money from tourism can fund the preservation and restoration of natural habitats and ecosystems, helping to protect the environment.

- **Socio-cultural Impacts**

Mountain communities can be very vulnerable to changes caused by tourism. High levels of visitor noise and activity can disrupt local life. Scarce resources like firewood, fish, and fresh water may become less available. Exposure to foreign traditions, lifestyles, and products can threaten the unique culture, traditions, knowledge, and livelihoods of mountain populations, especially in remote and indigenous communities.

21. United Nations Environment Programme, (2007).

On the positive side, tourism can boost pride in local traditions and promote cultural exchange, helping to preserve cultural heritage.
It can support community services and infrastructure development, improving the quality of life for local residents. By encouraging cultural exchange, tourism can enhance understanding and appreciation between different cultures.

• **Economic Impacts**

Tourism can provide significant local employment, but if not properly managed, this employment can be short-term and seasonal, offering little skill-building or training to local people. Working conditions can be poor, and revenue can easily leak out of local economies to companies based elsewhere.

On the other hand, well-managed tourism can create sustainable jobs and help reduce poverty by bringing in revenue and diversifying local economies. Tourism can improve infrastructure, provide community services, and enhance the self-sufficiency and sustainability of mountain communities by generating income and improving livelihoods. Properly managed tourism can play a key role in economic development and community well-being."[22]

Figure 2.7: The impact of global heating is becoming increasingly evident, as seen in the drop in snowfall levels in the Alps.

22. United Nations Environment Programme, (2007).

Figure 2.7. Photograph: Milan Schellingerhout

2.4. Iran and Its Tourism

Iran is one of the largest countries in the Middle East, covering about 1.65 million square kilometers and home to over 85 million people. Known as Persia until 1935, it has a history spanning over 7000 years. Its rich heritage is evident from the 13 cultural sites listed on UNESCO's World Heritage list (UNESCO, 2012a)[23] and nine entries in the World Intangible Heritage compendium (UNESCO, 2012b)[24]. The ancient Zoroastrian religion began in Iran, and there are significant religious sites for Shia Muslims, making the country a pilgrimage center (Zamani-Farahani & Henderson, 2011)[25].

Iran's geography includes two mountain ranges, a high plateau with large salt flats and vast deserts, fertile plains, and coastlines along the Caspian Sea and Persian Gulf. This results in a diverse climate, ranging from arid to subtropical, and a wide variety of plant and animal life (ICHTO, 2012)[26]. Politically and socially, the 1979 revolution was a major turning point, leading to the creation of the Islamic Republic, a theocratic state governed by Islamic principles and Shariah law. Religion is deeply integrated into daily life, shaping a patriarchal society where women are expected to be submissive.

Evidence of tourism in Iran dates back to ancient times, but modern development efforts began 75 years ago with the establishment of the Jalbe-Sayahan Bureau in the Ministry of the Interior. Iran's rich history and diverse geography offer a wide range of attractions and activities, including skiing, mountaineering, trekking, and beach vacations. The country's natural appeal is recognized, and the National Committee of Ecotourism works to both promote and conserve nature. However, in 2010, just over three million international arrivals were recorded (Bureau of Statistics, 2011)[27], showing unfulfilled potential.

23. UNESCO (2012). United Nations Educational, Scientific and Cultural Organisation world heritage list.

24. UNESCO (2012). Representative list of the intangible cultural heritage of humanity of Iran.

25. Zamani-Farahani, H. & Henderson, J.C. (2011). Iran: Shia pilgrimage and tourism. In World Tourism Organisation.

26. ICHTO (2012). About Iran.

27. Bureau of Statistics (2011). A report on international tourist arrivals to Iran.

Challenges to tourism growth include a strict social code, visa restrictions, inadequate accommodation and transportation, and insufficient marketing (EIU, 2008 [28]; Euromonitor, 2011[29]). Iran also struggles with a negative destination image (Alavi & Yasin, 2000)[30], particularly among major tourist markets, due to the revolution and the 1980-1989 war with Iraq.
Negative associations are strengthened by sanctions related to Iran's nuclear program, ongoing tensions with Western powers, and regional instability (EIU, 2012)[31].

The primary sources of incoming tourists are neighboring countries like Iraq, Turkey, Armenia, Azerbaijan, and Afghanistan. Other visitors mostly come from the Middle East, Central, and South Asia (Bureau of Statistics, 2011)[32]. Tourists typically participate in cultural and nature-based tours and study trips (Zamani-Farahani & Henderson, 2010)[33]. Many Iranians living abroad return to visit family or for pilgrimage. There is also a significant domestic market, with an estimated seven million trips made in 2010, although domestic spending is much lower than that of international tourists (Euromonitor, 2011)[34].

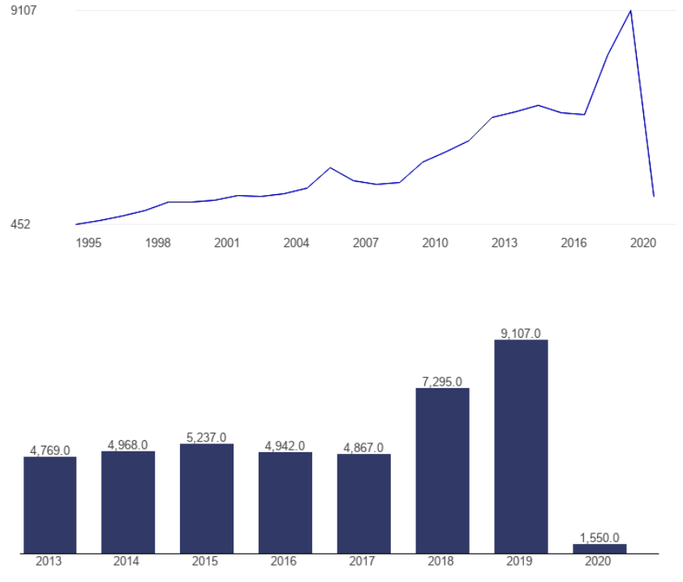


Figure 2.8: Foreign tourists travel to Iran.

28. EIU (2008). Iran country profile. London: Economist Intelligence Unit.

29. Euromonitor (2011). Travel and tourism in Iran.

30. Alavi, J., & Yasin, N. N. (2000). Iran's tourism potential and market realities: An empirical approach to closing the gap.

31. EIU (2012). Iran country report.

32. Bureau of Statistics (2011). A report on international tourist arrivals to Iran

33. Zamani-Farahani, H., & Henderson, J. C. (2010). Islamic tourism and managing tourism development in Islamic societies.

34. Euromonitor (2011). Travel and tourism in Iran. London: Euromonitor Intelligence.

Figure 2.8. The Global Economy

The government recognizes the economic importance of tourism as a way to diversify the economy and reduce reliance on the oil industry. Tourism is overseen by Iran's Cultural Heritage, Handicraft, and Tourism Organization (ICHTO), established in 2004.
The goal is to attract 20 million tourists by 2025 (Faghri, 2007)[35], as part of the 20-Year Outlook of the Country general development plan launched in 2005.
An $85 million budget was allocated for tourism development, and provincial governments were required to invest 5% of their civil funds in tourism infrastructure. Promotion efforts are expanding beyond the Middle East to improve tourism offerings, but cultural sensitivities exist, with a preference for foreign visitors who understand Islam. Iranians might be more accepting of outsiders (Zamani-Farahani & Musa, 2008)[36], though strong religious beliefs can influence attitudes (Zamani-Farahani & Musa, 2012)[37].

Foreign tourist arrivals in Iran reached some 2.93 million between January and July 2023, according to the latest United Nations World Tourism Organization (UNWTO) World Tourism Barometer.

Although the country's performance as a tourism destination is still far below that of 2019, which was before the start of the Covid pandemic, it is improving slightly compared to last year's statistics, ISNA reported on Wednesday.
The average statistics of Iran's tourism from January to August 2023 is 50% lower than the same period in 2019 based on the barometer that tracks the sector's post-pandemic recovery over the course of 2023 up to the end of July.

35. Faghri, R. (2007). Tourism planning and policy making of the Islamic Republic of Iran.

36. Zamani-Farahani, H., & Musa, G. (2008). Residents' attitudes and perception towards tourism development.

37. Zamani-Farahani, H., & Musa, G. (2012). The relationship between Islamic religiosity
and residents' perceptions of socio-cultural impacts of tourism in Iran.

Figure 2.9. Naqsh-e Rostam from Jean Chardin, Journal du voyage du Chevalier Chardin en Perse - (1686)

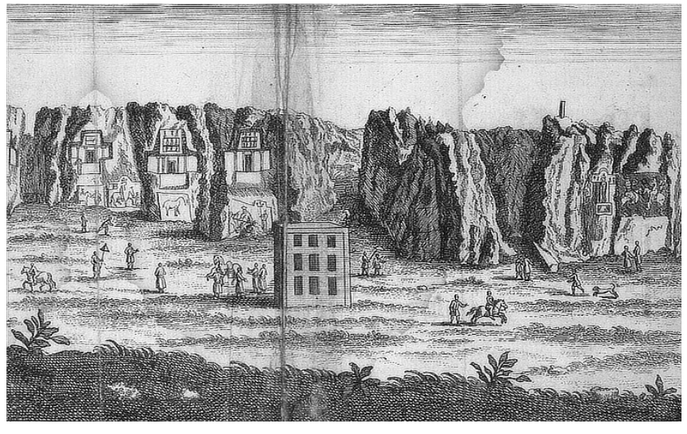


Figure 2.9: Naqsh-e Rostam - Tombs and reliefs. Naqsh-e Rostam is an ancient archeological site and necropolis located about 13 km northwest of Persepolis, in Fars Province, Iran

2.4.1 Rural Tourism in Iran

Rural tourism has also attracted official interest, partly to address the challenges faced by rural areas and their need for economic revival. About 29% of Iran's population lives in rural areas, spread across 64,000 villages (Iran's Statistics Centre, 2011)[38], with main sources of income being agriculture, fishing, and animal husbandry. Living standards are generally low, leading to outward migration and rural depopulation. These problems have negative economic and social effects, which tourism is seen as a potential solution to help reverse.

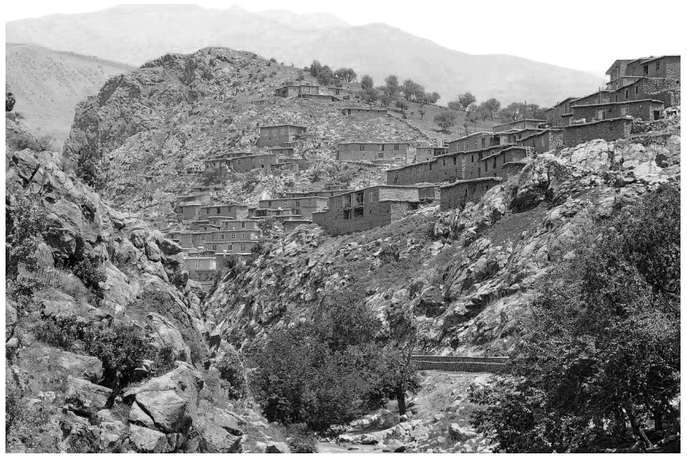


Figure 2.10: Palangan Village

There's reason for optimism as Iran's rural areas offer a lot to visitors. They host indigenous ethnic groups, giving many villages their own distinct character. Recognizing this potential, the government has focused on developing rural tourism as a means to alleviate poverty and create jobs.
Rural tourism has been prioritized in national tourism policies and featured prominently in Iran's Tourism Development and Management Master Plan (1998–2000), along with other strategies aimed at sustainable development (Ghaderi, 2008)[39].

38. Iran's Statistics Centre (2011). The initial reports of 2011 census of Iran.

39. Ghaderi, Z. (2008). Sustainable development of community-based tourism in Iranian rural areas.

Figure 2.10. Palangan Village, Sanandaj, Iran

2.4.2 Mountain Tourism in Iran

"The studies and review of relevant news of mountain tourism show that the mountains and folds of Iran have been important to an extent that can enter the tourism industry of the country."[40]

There are various approaches in this field:

• ***Planning system approach to mountain tourism***
This approach has the highest frequency in this field and lack of appropriate planning can be regarded as a reason for failure and unused specific capacity of mountains in the tourism industry.[41]

• ***The economic approach to mountain tourism***
On this basis, economic importance affects other aspects of that and considers mountain tourism an important way for the economic development of mountainous regions.[42]

•***The sustainable development approach to mountain tourism***
This is an approach, in which some attitudes and studies have been presented based on the concept of sustainable development (development based on environment) and expressed the economic development of mountain tourism, besides, to pay attention to protection and optimal use of resources and the natural environment.[43]

• ***Sport approach to mountain tourism***
This approach is another aspect of mountain tourism, which pays specific attention to sport in this field. This approach emphasizes mountaineering sport and believes that the development of mountaineering is a highlighted part of the development of mountain tourism.[44]

• ***The approach of considering the development of participation and public interest***
This approach believes that economic prosperity caused by mountain tourism is a field to achieve social justice and highlights the role of people of mountainous regions in the development of tourism.[45]

• ***Mountain as the natural landscape, the conceptual framework of the landscape approach***
Today, a holistic approach called landscape approach is considered in the relationship between humans and the environment, in which nature can't be considered just as a landscape or an ecologic element and physics. Although the concept comes from the west, the studies show that the attitude of Iranian people at past times to nature has been polysemous. Hence, this concept can be effective in the analysis of the relationship between humans and nature.

40. Dariush, B. & Dastyar, F. (2020). Landscape approach in mountain tourism; a case study of Alborz Mountains. Tourism of Culture, 1(2), 33-38.

41. Tabrizi & Mehrmand, (2011); Rezaei, (2016); Motahari, Arjmandi & Riazi, (2018); Jozi & Behzadi,(2015); Salehi, (2017).

42. Mountain Tourism, (2016); Karami, (2019); Ghadiri Masoum, Rezvani, Jomepour & Baghiani, (2015).

43. Behravesh, (2010); Babakhani, 2013; Zahedi, (2009).

44. Ouhadi, (2017); Akhundi, Danekar, Arjomandi & Shabanali fami, (2015).

45. Mousavi, (2019); Nabhani, (2018).

For example, the meaning of Damavand or Alborz Mountain for Iranian people is different from the meaning in the mind of people of other countries while encountering the mountains.

Iranian people living in these mountains have common subjectivity and the mental image of these mountains based on the slogans, stories, myths, idioms, and paintings and this is polysemous subjectivity specified to these people.

European Landscape Convention has provided a comprehensive definition and has described the landscape as the concept of an area, which is understood by people; a region with features arose from the interaction of human components and natural elements, which can encompass nature, urban areas, rural areas and countryside (CEO, 2000).[46]

Based on the definitions, the landscape is another type of place and is the product of the interaction of humans and the environment in outside spaces (Berque, 2008).[47] Simon Bell has analyzed the natural patterns and has found that landscape is a part of the environment, in which people live and understand it by the perceptions (Bell, 2012).[48]

Agustin Berque defines landscape as a type of place with biologic, ontological, and logical assumptions. In other words, he says that the existence of place is not being of that place, but it can be created in connection with the subject and specifically as living things (Berque, 2013).[49] Moreover, the landscape approach to natural elements based on sustainability concepts can lead to the sustainability of the environment.

The combination and integration of cognitive and subjective aspects of aesthetics valuation of the natural environment show considerable advancement in the spiritual and ethical aspects of the human mind. This can lead to environmental sustainability (Habibi, 2013).[50] The landscape is the macro space of human life in the environment and can't be created by itself.

With all subjective complications, the human can affect the environment in a reciprocating process (Mansouri, 2010).[51]

46. CEO (Council of Europe). (2000). European landscape convention.

47. Berque, A. (2008). landscape, place, history (M. Mansouri, Trans.). Bagh-e Nazar, 5(9)81-90.

48. Bell, S. (2012). Landscape: Pattern, Perception and Process.
London & New York: Routledge.

49. Berque, A. (2013). Is the Word "landscape" Changing There? Manzar, 5(13), 25-27.

50. Habibi, A. (2013). Contemplation in Philosophical Approach to the Aesthetics of Nature, Manzar, 5(22), 40-43.

51. Mansouri, S. A. (2010). Chistiy-e manzar-e shahri (What is the urbanlandscape), Manzar, 2(9), 30-33.

2.5 Qualitative Part[52]

In the qualitative part[53] of this thesis, 49 interviewees were present, among whom 40% had Master's degrees, 34% had Doctoral degrees, 16% had Bachelor's degrees, and 10% held Associate degrees.

The participants were randomly selected from various types of organizations, including students, ensuring a diverse representation of different sectors involved in mountain tourism. The random sampling method provided a comprehensive view of the stakeholders in the field. The participants' mean age was 29.59 years, with a standard deviation of 11.72 years, and their ages ranged from 18 to 65 years. This age distribution allowed for a broad spectrum of perspectives, capturing the insights of both younger and older individuals engaged in mountain tourism.

After carefully reviewing library documents and sources, conducting interviews, and converting the interviews into written text, we meticulously analyzed the phrases.
Concepts that aided in understanding the participants' views, experiences, and perceptions, aligned with the research title, were organized into tables and reviewed. These concepts were initially categorized into descriptive codes.

By clustering these descriptive codes, we derived interpretive codes. Subsequently, by clustering the interpretive codes, we identified comprehensive themes, representing the main factors of sustainability, infrastructure, and attractiveness.

Our questions aimed to uncover participants' experiences, motivations, preferences, and perceptions regarding mountain tourism. Key questions included:

- ***Motivations for visiting mountain areas:*** Understanding what drives people to these destinations helps in tailoring tourism strategies to enhance visitor satisfaction.
- ***Preferred types of accommodation:*** This sheds light on the demand for various lodging options, influencing infrastructure development.
- ***Perceived impacts of tourism on mountain areas:*** Gathering views on environmental, economic, and social impacts helps in assessing the sustainability of tourism practices.
- ***Views on balancing economic development with cultural preservation:*** Assessing the feasibility of achieving both economic and cultural goals simultaneously.

52. Questionnaire form

53. Questionnaire results

Comprehensive themes	Interpretive codes	Descriptive codes
Sustainability	Reduction and eradicate of poverty	•Promote and advancement of small businesses • Entrepreneurship and empowerment of the local community • Reduction and ultimately eradicate poverty
	Reduction and eradicate of hunger	• Selling local products to mountain tourists • Reduction and eradicate hunger
	Assurance of inclusive education quality	• Technical and vocational training related to tourism • Improving the quality of education for the local community
	Gender equality	• Civic participation and leadership in relevant institutions for women and men • Gender equality between women and men
	Safe water and wastewater management	• Public access to safe and drinking water • Proper disposal of sewage in mountainous areas • Conservation of water-related mountain ecosystems
	Ensuring health, wellness, and well-being	• Improving health and reducing infectious and non-communicable diseases • Helping with health services
	Proper position and economic growth	• Creating appropriate jobs with a fair salary • Sustainable economic growth without degrading the mountain environment
	Reducing inequality within and between countries	• Renovation and development of cities and villages in mountainous areas • Encourage investors to participate in regional projects
	Creating safe, resilient, and sustainable cities and villages	• Preservation and restoration of cultural and natural heritage • Reduction of damages due to natural disasters • Creating more intelligent and greener settlements
	Climate change and its effects	• Improve transportation and housing to reduce carbon footprint • Strengthen resilience and improve adaptation to natural disasters
	Participating in achieving these goals	• Necessary partnerships to achieve the common goals of sustainable development • International supports for national plans to achieve common goals

Descriptive codes	Interpretive codes	Comprehensive themes
• Managers' awareness of the critical role of tourism in the economic prosperity • Stability of prices and inflation control • Public / private investment and support • Increasing the share of employment of local communities in mountain tourism	Economic infrastructure Infrastructure	Infrastructure
• Training and monitoring of interactions between tourists and the local community • Respect for cultural differences in destinations • Development of life and communication skills in tourism staff and managers	Socio-cultural infrastructure	
• Planning of managers to play a critical role in tourism in the future of the country • Science-based perspective and access to relevant knowledge, information, and statistics • Decision-making with stakeholder participation and attention to related organizations	Management and planning infrastructure	
• Creating and improving accommodation and hospitality infrastructure in the mountains • Creating and improving infrastructures related to communications, medicine, and technology • Development of infrastructures related to intercity transportation	Structural and transportation factors infrastructure	
• Preparing guidebooks, brochures, websites, media, visual media, etc., for advertising • Modern, targeted, and specialized marketing to attract interested people	Marketing and advertising infrastructure	
• Diversity, quality, and manner of providing services related to banking, security, and visa	Facilities and services infrastructure	
• Existence of high mountains • Climate diversity • Existence of visual attractions • Existence of diverse and unique flora and fauna in the mountains	Natural attractions	
• Possibility to do various mountain sports • Existence of various hiking climbing tracks • Existence of various routes for mountaineering, rock climbing • Existence of regional cultural celebrations • Organizing events, competitions, and camps • Identify appropriate mountain tourism areas • Existence of historical mountain attractions	Artificial attractions	

In conclusion, our qualitative study has illuminated the complexities of sustainable mountain tourism. Through diverse interviews, we identified key factors influencing sustainability, infrastructure, and destination appeal. The findings highlight the importance of supporting local businesses and enhancing cultural diversity through holistic approaches.

Political coordination and infrastructural improvements are crucial for fostering sustainable tourism growth. Effective collaboration among policymakers, practitioners, and researchers, coupled with evidence-based strategies, is essential to achieve economic prosperity while preserving cultural heritage and natural ecosystems.

Moving forward, sustained efforts are necessary to drive sustainable tourism practices. By prioritizing sustainability, we can ensure mountain destinations thrive as resilient, inclusive, and sought-after tourist spots.
The insights gained from this study provide a roadmap for stakeholders to develop and implement strategies that balance tourism development with environmental and cultural preservation.

2.5.1 Value Proposition Canvas

The value proposition canvas provided offers a detailed look at how various products, services, pain relievers, and gain creators align with the needs and desires of customers engaged in mountain tourism. By connecting this analysis to our previous qualitative study conclusions, we can provide a comprehensive strategy for fostering sustainable tourism growth.

• **Products and Services:**

The canvas offers diverse options like affordable accommodations, cultural festivals, nature trails, educational workshops, and health programs. These cater to different tourist needs, ensuring a holistic and enriching experience.

• **Pain Relievers:**

It addresses common tourist issues such as budget constraints, safety, and accessibility. Eco-friendly options, clear information on attractions, and accessible transport services help alleviate these concerns, ensuring a smooth and enjoyable visit.

Figure 2.11. (Find on page 58-59) Value propostion canvas

• **Gain Creators:**

The canvas highlights benefits like seasonal job opportunities, community-based projects, and year-round activities. These not only enhance the tourist experience but also support local economies and promote sustainability.

From our qualitative study, we identified key factors influencing the sustainability of mountain tourism, including the need for political coordination, infrastructural improvements, and holistic approaches that support local businesses and cultural diversity. The value proposition canvas aligns with these findings in several ways:

• ***Sustainability and Eco-Friendly Options:*** By offering eco-friendly accommodation and transport options, the canvas addresses environmental concerns, supporting sustainable tourism practices. This is crucial for preserving natural ecosystems as identified in our study.

• ***Supporting Local Economies:*** The creation of seasonal job opportunities and community-based tourism projects resonates with our conclusion that supporting local businesses is essential. These initiatives ensure that the economic benefits of tourism are felt locally, promoting economic prosperity without compromising cultural heritage.

• ***Inclusive and Accessible Infrastructure:*** The emphasis on accessible transport services and accommodations aligns with the need for infrastructural improvements. Ensuring facilities are accessible to all visitors, including those with mobility issues, fosters inclusivity, a key aspect of sustainable tourism.

• ***Holistic Visitor Experience:*** The range of activities and accommodation options, from budget-friendly to luxury, along with health, wellness, and educational programs, supports the idea of a holistic approach to tourism. This diversity caters to different visitor needs and enhances the overall appeal of the destination.

Value Proposition

Customer Segment

Products And Services

The products and services you offer to help your customer get their jobs done

Pain Relievers

The ways your products or services reduce customer pains

Gain Creators

The ways your products or services provide benefits and create customer gains

Gains

Positive outcomes or benefits that the customer wants

Pains

Negative experiences, emotions, or risks that the customer encounters before, during, or after trying to get a job done

Customer Jobs

Tasks, problems, or needs that the customer wants to address

2.6. Users , Activity , Function

In architectural designs, from small spaces such as offices to large tourist towns, identifying users, their activities and their required functions are of particular importance. The users of the tourist town include local residents and tourists, each of whom has different needs. To meet these needs and provide a good experience, appropriate activities and services should be provided.

In this regard, it is also necessary to pay attention to the sustainability of the environment and resources. Using natural resources optimally, reducing energy consumption, and environmentally friendly designs can help preserve natural resources and reduce negative environmental effects.

By knowing the users and their needs, it is possible to determine suitable and sustainable services and functions and help to improve the region and attract more tourists. This approach not only enhances the user experience but also helps to preserve the environment.

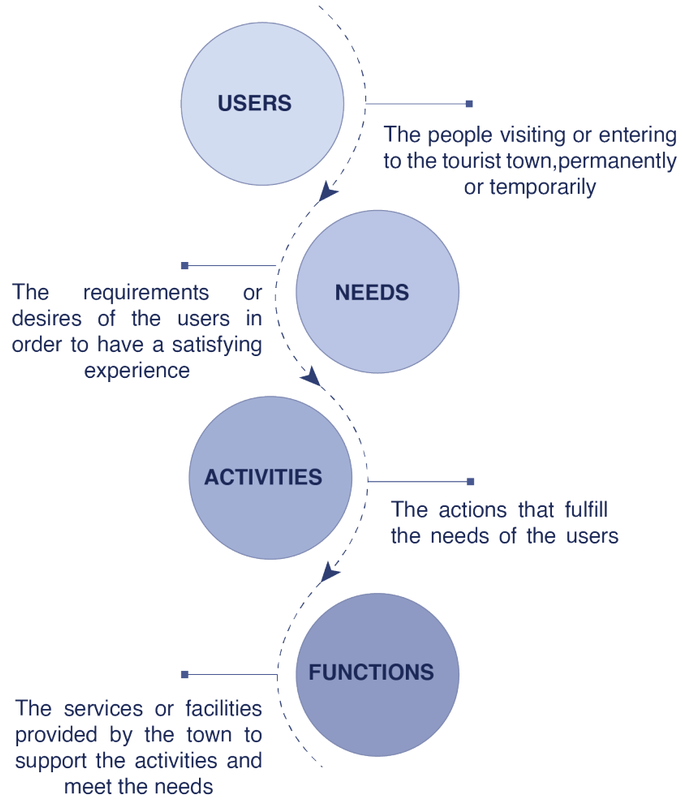


Figure 2.12

Figure 2.12 : A conceptual theme of user to function identification.

2.6.1. Users identification

Understanding the users of each tourism destination can be done by categorizing them in many different ways and terms. For a tourism town, the main user category would be local and non-local people coming there in order to spend their time, maybe less than 24 hours only for visiting and short-term goals, or it can be also more than 1 day for many other reasons it can be found in the figure 2.13.

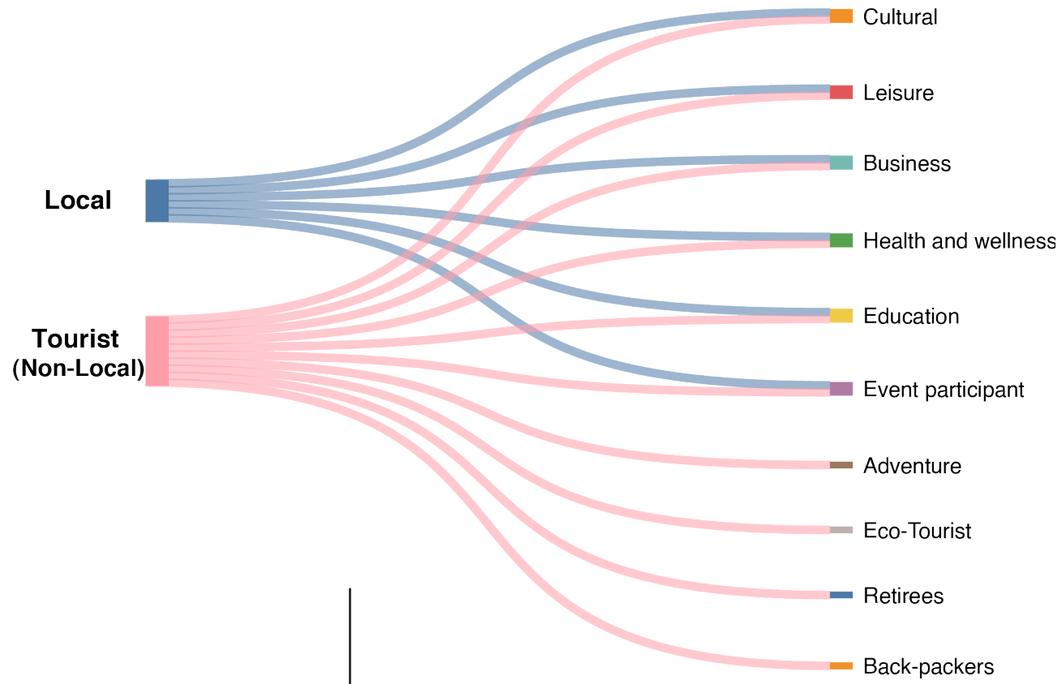


Figure 2.13 : User identification

Figure 2.13 : User identification focusing on local and non-local tourist .

Each of these users, based on their tourism goals, requires diverse activities in the area.Given that one of the goals of sustainable design in a tourist resort is to address economic needs and create jobs, and considering the region's very limited medical, health, and educational facilities, we can turn these needs and weaknesses into opportunities and focus more on them in the proposed plan. With this approach, we can create job opportunities for local residents and contribute to the economic development of the area.

2.6.2. Users - Age category

Users of a tourist destination can be divided into different age groups, from children to seniors, each with unique needs and activities to enjoy their time there.

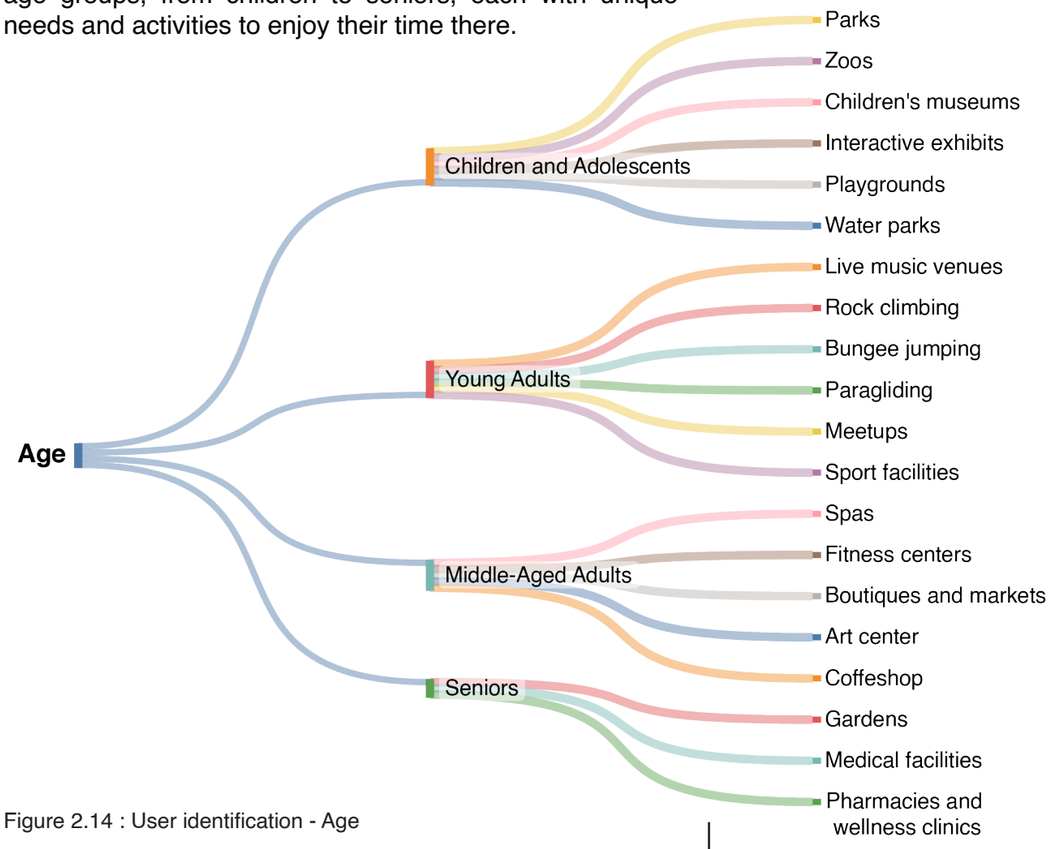


Figure 2.14 : User identification - Age

Understanding the different categories of users visiting a tourist destination is essential for identifying and implementing the appropriate and satisfying activities and functions that align with sustainable development goals.
The United Nations Sustainable Development Goals (SDGs) are a crucial component of sustainable design and should be integrated into various stages of the project design process.Since In our region, there is insufficient attention to the roles of girls and women in society and by considering age and gender, we can link two of the SDGs to our tourist town design.

SDG 5: Gender Equality
Aims to achieve gender equality and empower all women and girls. This goal can be addressed through various activities and functions for different age groups in a tourist town.

Figure 2.14: User identification focusing on different ages

For example, meeting rooms can be created for teenagers to engage in interactive workshops about gender equality through games and educational materials.
For adults, businesses can be promoted and supported to implement equal pay policies and provide opportunities for women in leadership roles.

By integrating these considerations, we can create a tourist town that promotes gender equality across all age levels.

Figure 2.15 : Goal 5 of SDGs

Figure 2.16 : Goal 12 of SDGs

Figure 2.15 :Goal Number 5 of sustainable development goals which mention gender equality

Figure 2.16 :Goal Number 12 of sustainable development goals which mention responsible consumption and production

SDG 12: Responsible Consumption and Production
Aims to ensure sustainable consumption and production patterns. Different age groups in a tourist town can be engaged in various ways to support this goal:

- Children and Teenagers: Create open areas, meeting rooms, and local schools where they can learn about recycling, upcycling, and the importance of reducing waste. They can participate in workshops on sustainable tourism and its environmental impacts.

- Adults: Promote businesses that follow sustainable practices, such as hotels using renewable energy, restaurants minimizing food waste, and shops selling eco-friendly products.

- Seniors: Develop open areas and walking paths where they can participate in guided walks that highlight the importance of preserving the town's natural heritage.

By implementing these strategies, we can promote responsible consumption and production across all age groups in the tourist town.

2.6.3. Users - Income level category

Tourists visiting a destination can be categorized by income levels, each affecting the design process and having different needs and activities.

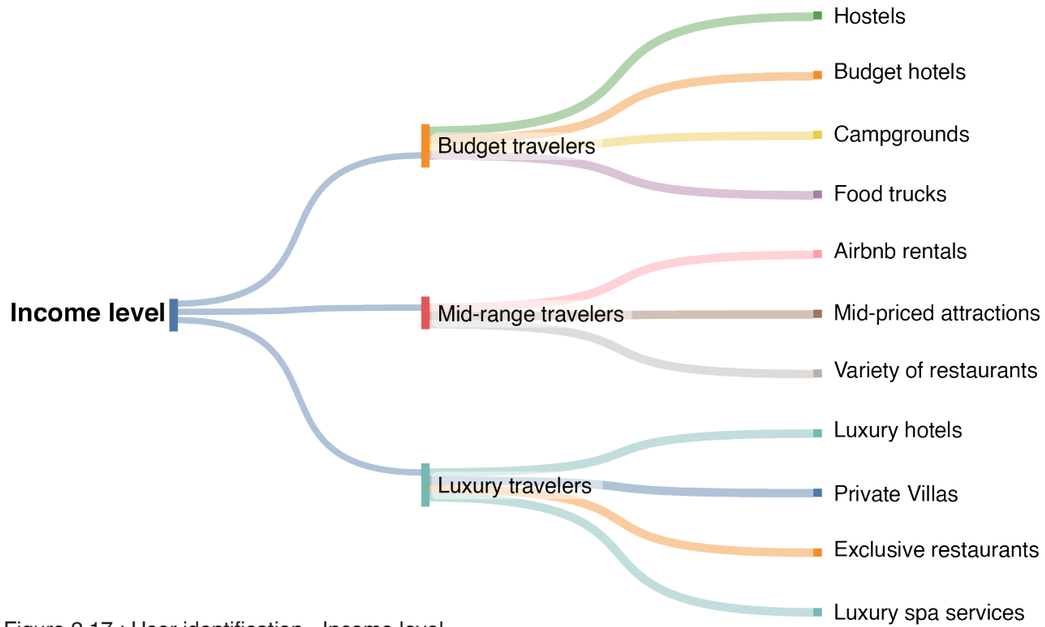


Figure 2.17 : User identification - Income level

In terms of income level, tourism can be linked to **SDG 10**: Reduced Inequalities, which aims to reduce inequality within and among regions and nearby cities.

- High-Income (Luxury) Tourists: Encourage high-income tourists to participate in community-based tourism projects that benefit local communities. Promote luxury eco-tourism options that contribute to local conservation efforts.
- Budget & mid range Tourists: Develop affordable and budget-friendly accommodations, as well as discounted public transportation, to make tourism accessible to low-income visitors.

Figure 2.18 : Goal 10 of SDGs

Figure 2.19 : Goal 11 of SDGs

Figure 2.17 : Understanding users and their required functions, with a focus on different age groups.

Figure 2.18 :Goal Number 10 of sustainable development goals which mention reduced inequalities

Figure 2.19 :Goal Number 11 of sustainable development goals which mention sustainable cities and communities

SDG 11: Sustainable Cities and Communities, which aims to make cities and human settlements inclusive, safe, resilient, and sustainable.

- High-Income (Luxury) Tourists: Invest in green hotels and eco-friendly transport. Encourage responsible spending to support local businesses and cultural sites.
- Budget & mid range Tourists: Develop inclusive parks, museums, and community centers. Promote cultural exchange programs for community engagement.

Given that 60-70% of people in the region have low income, implementing this goal with the participation of high-income tourists and locals can help improve the area.

2.6.4. Users - Seasonal visitor category

Figure 2.20 : User identification - Seasonal visitors

In every tourist town, seasonal visitors are common. To prevent the town from becoming deserted during off-peak periods and to attract visitors throughout the year, diverse activities and functions should be offered in each destination.

In terms of seasonal visitors category, tourism can be linked to:

SDG 8: Decent Work and Economic Growth
Aims to promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all.

Figure 2.20 : Understanding users and their required functions, with a focus on different seasonal visitors

Implementation:

- Peak-Season: During peak tourist seasons, create job opportunities with decent working conditions for local residents. Promote seasonal employment in sustainable tourism sectors such as eco-tourism guides, local craft markets, and cultural festivals.

- Off-Season: Develop off-season attractions like workshops on local crafts, history tours, and wellness retreats to encourage year-round tourism. These initiatives provide steady employment opportunities and mitigate economic disparities caused by seasonal fluctuations.

To support these efforts, it's essential to build both open and indoor spaces for workshops, events, markets, and restaurants, ensuring they are versatile and accessible throughout the year.

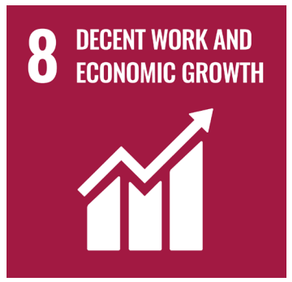


Figure 2.21 : Goal 8 of SDGs

Figure 2.22 : Goal 13 of SDGs

SDG 13: Climate Action
Aims to Take urgent action to combat climate change and its impacts.

Implementation:

- Peak-Season: Implement measures to reduce the carbon footprint of tourists during peak seasons, such as promoting public transportation, providing bike rentals, and encouraging eco-friendly accommodations.

- Off-Season: Use the off-season to restore and protect natural habitats impacted by tourism. Organize community clean-up events and tree-planting initiatives. Educate tourists on sustainable practices and the importance of protecting the environment during their visits.So we can also design spaces for winter sports and indoor parks.

Figure 2.21 :Goal Number 8 of sustainable development goals which mention decent work and economic growth

Figure 2.22 :Goal Number 13 of sustainable development goals which mention climate action

2.6.5. Users - Special interests

Connecting the special interests of tourists to Sustainable Development Goals (SDGs) helps highlight how tourism can contribute positively to global sustainability efforts.

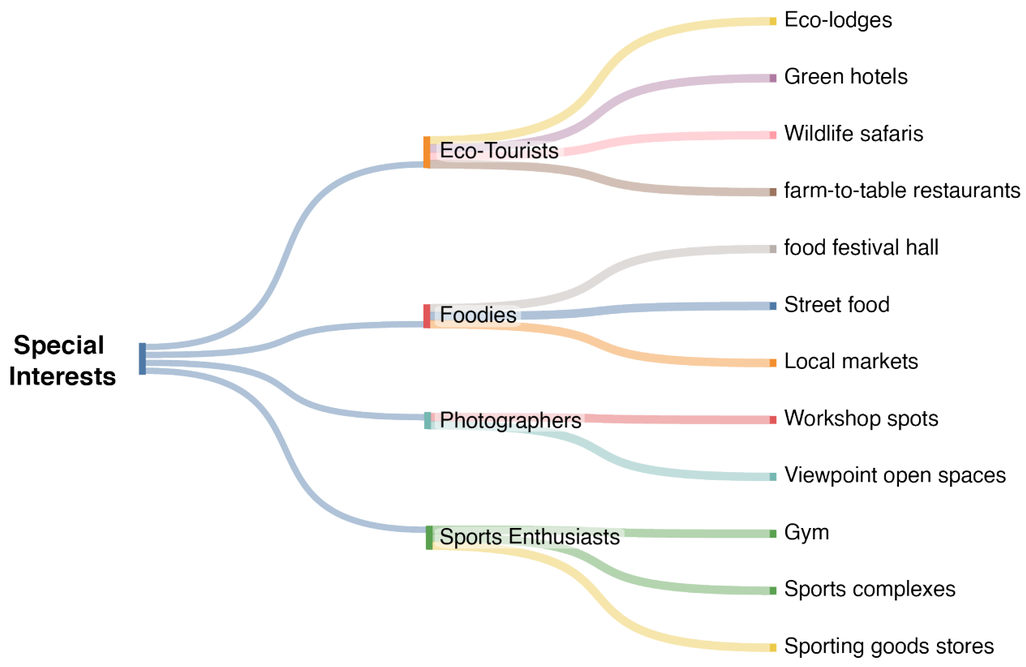


Figure 2.23 : User identification - Special interests

In terms of special interest category, tourists can be divided into various interests.For example Eco-tourist that focuses on experiencing and conserving natural environments and wildlife.Eco-tourism can be linked to :

SDG 15: Life on Land

Eco-tourism promotes the conservation and sustainable use of terrestrial ecosystems, biodiversity, and forests.
Activities such as nature walks, wildlife safaris, and conservation programs contribute directly to protecting biodiversity and habitats, aligning with SDG 15 targets.We can also design some green hotels for environment lovers who wants to respect the environment while using it.

Figure 2.23 : Understanding users and their required functions, with a focus on special interests of different users

Another tourist interest, food tourism, which involves exploring local cuisine, culinary traditions, and local farms, can be linked to :

SDG 2: Zero Hunger

Food tourism promotes local food systems, supports small-scale food producers, and enhances food security by showcasing traditional and sustainable farming practices.
By creating local markets, food tours, and farm-to-table experiences, tourists contribute to promoting sustainable agriculture and food security.

Figure 2.24 : Goal 15 of SDGs

Figure 2.25 : Goal 2 of SDGs

2.6.6. Users - Activity preferences

Each tourist in a destination has unique activity preferences that require specific needs and functions. Different activities can align with Sustainable Development Goals (SDGs) in various ways, but two crucial ones for adventure seekers and cultural enthusiasts are SDG 3 (Good Health and Well-Being) and SDG 4 (Quality Education).

Adventure seekers, engaging in extreme sports such as paragliding, bungee jumping, and white-water rafting. So their activities can be aligned with :

SDG 3: Good Health and Well-Being
Adventure tourism promotes physical activity and outdoor recreation, contributing to improved health and well-being among participants. To meet the diverse needs of tourists, a tourist town should offer a range of facilities to enhance their adventure experiences sustainably and memorably. For instance, in winter, ski resorts and sports rental shops cater to visitors. Additionally, biking paths and rest stops are essential to accommodate their preferences.

Figure 2.24 :Goal Number 15 of sustainable development goals which mention life on land

Figure 2.25 :Goal Number 2 of sustainable development goals which mention zero hunger

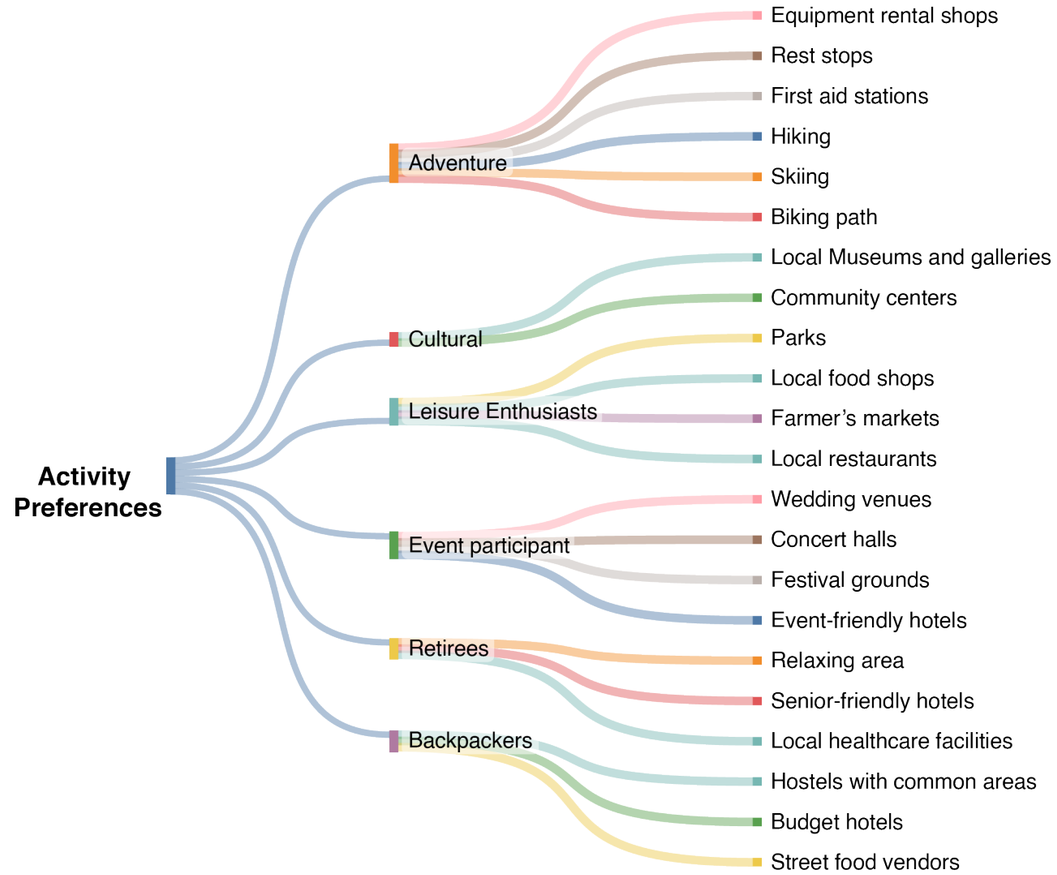


Figure 2.26 : User identification - Activity preferences

Figure 2.26 : Understanding users and their required functions, with a focus on activity preferences of the users

SDG 4: Quality Education

Cultural tourism supports educational opportunities by fostering appreciation for cultural diversity, heritage, and history among tourists and local communities. It promotes lifelong learning and the preservation of cultural heritage, contributing to quality education and cultural literacy. To meet their needs, we can design community centers, meeting halls, and classrooms to enhance education and community engagement.museums and and natural open spaces and landmarks also can be helpfull to fulfill their needs.

Figure 2.27 : Goal 3 of SDGs

Figure 2.28 : Goal 4 of SDGs

2.6.7. Users - Trip purposes

Each tourist may visit a destination for various purposes such as education, business, or medical needs, each requiring specific services and facilities.Different trip purposes of touristscan be linked to different Sustainable Development Goals (SDGs):

Business Trips linked to:
SDG 8 : Decent Work and Economic Growth which aims to promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all.

Business trips contribute to economic growth by generating employment opportunities in the tourism and hospitality sectors. They stimulate local economies through spending on accommodation, dining, transportation, and other services. To meet their needs and stimulate economic growth, tourist destinations can provide facilities like hotels and conference halls, which create jobs for locals and contribute to the community's economic prosperity.

Educational Trips linked to:
SDG 4 : Quality Education which aims to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.

Educational trips promote cultural exchange, knowledge sharing, and learning experiences. They support local educational institutions and initiatives by providing resources, fostering global awareness, and promoting sustainable practices in tourism and hospitality.

Figure 2.27 :Goal Number 3 of sustainable development goals which mention good health and well-being

Figure 2.28 :Goal Number 4 of sustainable development goals which mention quality education

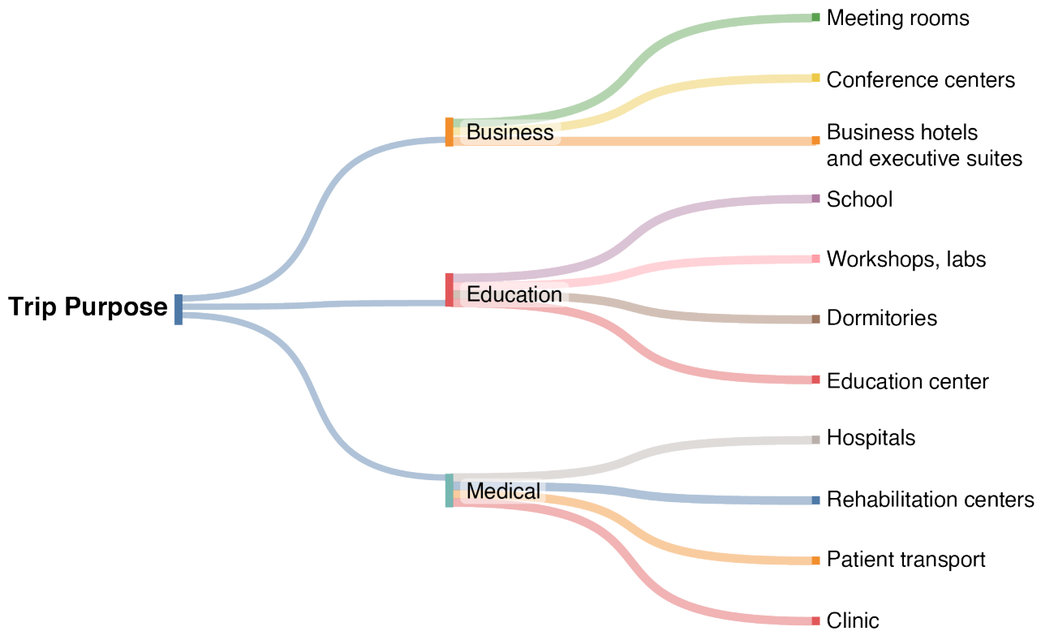


Figure 4.29 : User identification - Trip purposes

Figure 2.29: Understanding users and their required functions, with a focus on users trip purposes

Medical Trips linked to :

SDG 3 : Good Health and Well-Being which aims to ensure healthy lives and promote well-being for all at all ages.

Medical trips support access to quality healthcare services and facilities. They contribute to improving health outcomes, promoting medical tourism destinations, and enhancing infrastructure and services related to healthcare, thus advancing the goal of good health and well-being.

By aligning these trip purposes with specific SDGs, tourism destinations can strategically focus on sustainable development initiatives that cater to the diverse needs and benefits associated with each type of travel.

03/

Case Studies & Best Practices

3.1 Case Studies on Mountain Tourism Development and Management

The case studies presented in this section focusing on various projects and initiatives aimed at the development and management of tourism activities in mountainous regions across the globe. These case studies highlight the outcomes achieved and the challenges faced by both private and public stakeholders as they implemented various strategies and solutions to promote tourism development. The case studies cover a range of tourism domains, including:

- ***Cultural Tourism:*** Exploring initiatives that emphasize the unique cultural heritage, traditions, and practices of mountain communities.
- ***Food Tourism:*** Showcasing projects that highlight local cuisine, traditional food production methods, and culinary experiences unique to mountain regions.
- ***Nature-Based Tourism:*** Focusing on activities that allow tourists to engage with and appreciate the natural environment, such as hiking, wildlife watching, and eco-tourism.
- ***Rural Tourism:*** Presenting initiatives that promote tourism in rural mountain areas, offering insights into local lifestyles, agriculture, and rural traditions.
- ***Snow and Winter Tourism:*** Highlighting projects that develop and manage winter sports and recreational activities, such as skiing, snowboarding, and snowshoeing.
- ***Governance Models and Policies for Sustainable Mountain Tourism:*** Analyzing the frameworks and policies that ensure tourism development is sustainable, benefiting local communities while preserving the environment.

These case studies provide valuable insights into effective practices and potentials in mountain tourism, offering lessons that can be applied to future tourism development efforts in similar contexts.

In Iran, the development of mountain tourism holds significant potential, given the country's rich cultural heritage, diverse landscapes, and vibrant local traditions. By developing strategic governance models and engaging both private and public stakeholders, Iran can enhance tourism's role in its mountainous areas, benefiting local economies and preserving its unique environmental and cultural assets for future generations.

3.1.1 Mountaineering Villages for Sustainable Alpine Tourism

The Mountaineering Villages initiative was created to address the negative environmental and social impacts of tourism development. It aims to promote sustainable Alpine tourism by encouraging responsibility for the natural and cultural heritage of the European Alps.

This initiative helps implement the Alpine Convention at a local level. The Alpine Convention is an international agreement focused on the protection and sustainable development of the Alps, signed by eight Alpine countries (Austria, France, Germany, Italy, Liechtenstein, Monaco, Slovenia, and Switzerland) along with the European Union.

Launched by the Austrian Alpine Association in 2008, the Mountaineering Villages project has grown into a broader Alpine initiative. By summer 2021, the network included 35 villages: 22 in Austria, 4 in Germany, 5 in Italy, 2 in Slovenia, and 2 in Switzerland, covering about 3,000 km² with a population of 44,200[1].

The Reason: The Mountaineering Villages initiative was selected as a case study because it embodies key principles of sustainable tourism development, which directly align with the goals outlined in the thesis**.**

1. This figure is based on the total municipal surface area in which the villages are located.

Figure 3.1. The Mountaineering Village of Lungiarü, in the Italian province of Bolzano/South Tyrol. © Associazione Turistica San Martin de Tor, St. Vigil in Enneberg.

Villages that wish to join must meet strict criteria, such as:

• Supporting local culture and traditions;
• Offering sustainable tourism options focused on mountain activities;
• Actively conserving nature and landscapes, avoiding major new infrastructure developments;
• Planning new projects in harmony with existing surroundings;
• Supporting local producers in farming, forestry, and other sectors;
• Encouraging public transport and reducing car use by providing adequate public transport and cycling and walking routes;
• Promoting exchanges among Mountaineering Villages.

A set of targets ensures that the Mountaineering Village designation promotes continuous progress toward sustainable tourism. These targets include developing public transport services and infrastructure, connecting initiatives that promote local culture, creating specific guidebooks and maps, and establishing nature reserve services that combine tourism and nature protection.

Two key elements make the Mountaineering Villages initiative unique: its cooperative approach involving local actors and its transnational nature. The success of current Mountaineering Villages has inspired other communities across the Alps, with six new villages joining in 2021, including the first two in Switzerland.
The initiative's appeal lies in the recognition of being a pioneer in sustainable tourism and being part of a network of like-minded communities. Villages hold annual meetings to share experiences and develop new, collaborative projects.

Figure 3.2. © Associazione Turistica San Martin de Tor, St. Vigil in Enneberg.

Figure 3.2: Village of Lungiarü

One of the major challenges is maintaining the interest and engagement of local actors. Initially, a single coordinator (such as a mayor or tourism representative) often led local activities. Since 2013, the responsibility has typically been shared among a group to ensure continuity in case of retirements or changes in office.

Each village differs in terms of infrastructure, economic strength, culture, and lifestyle. However, all share the belief that tourism development is not solely about building infrastructure. They advocate for enhancing tourist facilities and services based on natural and cultural foundations, with community support being essential.

Creating a shared vision for tourism development among different stakeholders is both challenging and rewarding. A key lesson from the success of the Mountaineering Villages is that local support and involvement are crucial.

Being a Mountaineering Village requires meeting strict criteria, focusing on what a community wants to achieve in the future, beyond tourism development. A commitment to the philosophy and the vision of the Mountaineering Villages has made the project a success – and the greatest lesson learned is that a socially and environmentally sustainable life in the Alps is possible through hard work and dedication.

In essence, this case study serves as a benchmark for the sustainable principles we aim to integrate into the master plan, demonstrating how a thoughtful, community-driven approach can result in long-term benefits for both people and the environment.

Figure 3.3: Walking trail of Lungiarü across Spizan

Figure 3.3. © Associazione Turistica San Martin de Tor, St. Vigil in Enneberg.

The Reason: This case study provides valuable insights for our thesis and master plan design by offering a model for balancing tourism development with environmental conservation, particularly in regions that experience fluctuating tourist activity based on seasonal demand.

Figure 3.4. Snow hills in Australia, © Tarryn Myburgh / Unsplash

3.1.2 Climate change adaptation for ski resort destinations, Mount Baw Baw, Australia

Baw Baw National Park is a 13,530-hectare protected area in southeastern Australia, about 120 km east of Melbourne. Mount Baw Baw, one of several peaks on the Baw Baw Plateau, stands at 1,567 meters, giving it a subalpine climate.

The Mount Baw Baw Alpine Resort, a 30-hectare leased area within the national park, sees most of its visitors in the winter, with annual visits ranging from 50,000 to 70,000. This makes it the least visited alpine resort in Australia.

The resort attracts many first-time and beginner visitors from diverse backgrounds. In the 2015 winter, visitors spent an average of USD 35-44 per person per visit. Mount Baw Baw contributes around USD 5.85 million to the Baw Baw Shire's Gross Regional Product and generates 178 full-time equivalent jobs, which is 0.8% of the local employment.

Climate change is likely to shorten the snow season in Victoria, delay its start, and reduce the maximum natural snow depth. As a result, profits from the winter season are insufficient, and the resort has relied on government funding of USD 2.3-3.9 million per year to cover operational costs.

In 2016, resort management decided to shift focus to the “green season” to better utilize infrastructure and achieve sustainability. Two options were considered after consulting stakeholders, analyzing visitor and financial data, and conducting market research. The chosen option involved reinventing the resort to be less affected by climate change, introducing a phased approach to target market shifts and product development.

In the short term (first two years), the resort planned to enhance its offerings for all seasons, introducing dry slopes and magic carpets for snow play during the green season. This would set Mount Baw Baw apart by offering year-round snow play.

In the medium term (three to five years), the resort aimed to invest in tourism product development to extend visitors’ stays and increase revenue. Plans included improving the main ski run for year-round use, adding chair lifts, a dry slope, bouldering, and a snow factory to produce snow in warmer temperatures. Additionally, a two-level school program featuring adventure facilities and environmental education was proposed to boost green season growth.

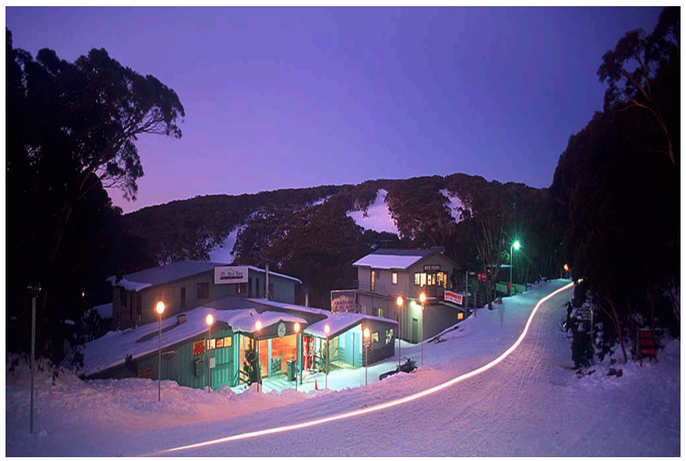


Figure 3.5: Wide range of accommodiation for different budgets

Figure 3.5. © James Lauritz
Images supplied by Mt Baw Baw Alpine Resort

Focus groups tested the appeal and price points of these new offerings with the target markets. In the long term (six to ten years), the resort planned to create luxury accommodations to convert activity investments into overnight stays during the green season.

Resort management and local stakeholders are committed to this phased plan. Currently, the short-term recommendations have been implemented, and funding is being sought for medium-term proposals.

Mountain ski resorts like Mount Baw Baw face increasing challenges due to climate change. This case study outlines a process to transform a vulnerable ski resort into a more resilient destination. These strategies can be applied to other mountain tourism destinations as well.

Figure 3.6: Outside the snow season

In summary, the Mount Baw Baw case study provides an excellent parallel for our thesis, demonstrating how smaller-scale alpine destinations can contribute to economic growth, job creation, and environmental preservation through sustainable tourism practices. It reinforces the importance of year-round tourism, inclusivity, and ecological responsibility, all of which are central to our proposed master plan.

Figure 3.6. © James Lauritz
Images supplied by Mt Baw Baw Alpine Resort

04/

Analysis and Assessment

4.1. Characteristics of the case study

Kohrang County is the most extensive county in Chaharmahal and Bakhtiari Province. The center of this county is the city of Chelgerd.

Kohrang County is known for the presence of Zardkuh[1] (the second highest peak in the Zagros Mountains, the snow-capped pole of the country's mountains), the fertile source of Zayandeh Rud, Karun[2]. The Kohrang region is one of the coldest areas in Iran and also the most snowy point in the country, where snow depths in this area reach several meters in normal years, earning it the title of the snow capital of Iran.

The territorial urban planning system of Iran's Chaharmahal and Bakhtiari province focuses on addressing the challenges of rural depopulation, infrastructure gaps, and environmental preservation in this mountainous region.

Analytically, the system aims to balance urban-rural migration by promoting economic opportunities in rural areas, improving transportation networks, and ensuring sustainable land use while protecting fragile ecosystems. Institutions of reference include the Ministry of Roads and Urban Development (MRUD), which spearheads the national urban strategy; the Iranian Urban Development and Revitalization Corporation (UDRC), responsible for urban regeneration. Local municipalities and environmental organizations also play crucial roles in implementing and overseeing these plans, ensuring both urban growth and environmental sustainability are achieved across the province.

Figure 4.1: Access road to Kohrang village

1. Zardkuh height: 4221m

2. The Karun River is the largest, and longest river in Iran, originating from Zardkuh ultimately flowing into the Persian Gulf.

Figure 4.1. Self-taken photo

4.1.1. Site Location

The site is situated at 50 degrees and 13 minutes longitude and 32 degrees and 31 minutes latitude, approximately one kilometer west of the village of Dimeh in the central part of Kohrang city.

Positioned atop hills that overlook the springs of Dimeh, a crucial source for the Zaindeh Rood River, the location boasts centrality compared to other tourist centers in Kohrang.equipped with basic services enhances its potential for development. The design of the area incorporates programmable spatial-positional parameters, ensuring that it is planned with precision and efficiency.

The site offers a wide range of landscapes, diverse land construction possibilities, and suitable topography.

Moreover, its proximity to residential centers equipped with basic services enhances its potential for development. The design of the area incorporates programmable spatial-positional parameters, ensuring that it is planned with precision and efficiency.These measures are implemented to maximize the usability of the land, making it a clear and valuable space for development.

Figure 4.2: Site geographical situation

Figure 4.2. Site situation in Iran provinces map - “created by the author”

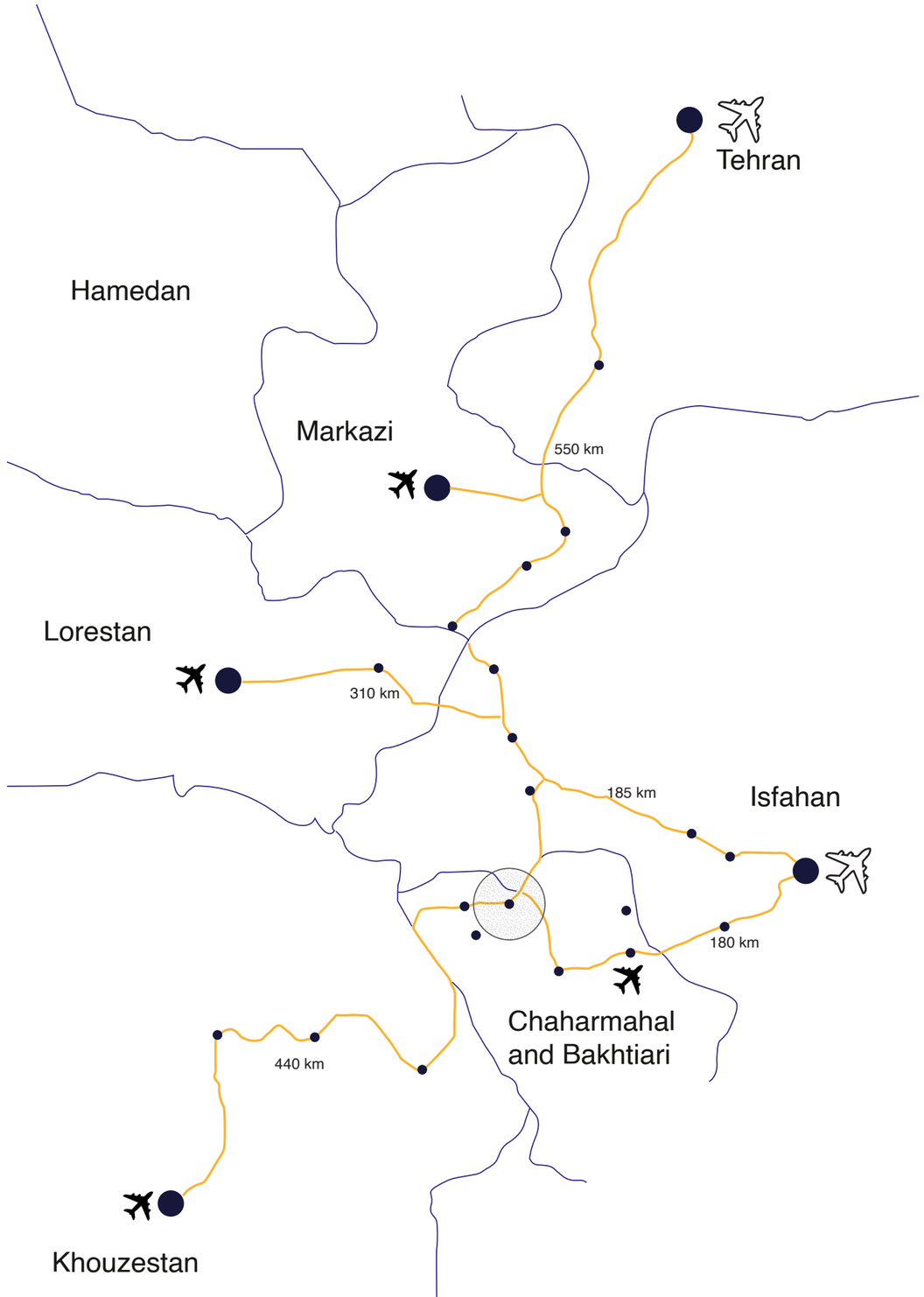


Figure 4.3. Distance to other cities, “created by the author”

Figure 4.3: Kohrang’s connection to other cities

4.1.2. Transportation (Airports)

Chaharmahal and Bakhtiari province has an airport in Shahrekord that has limited flights. According to recent statistics, the domestic flights of this province are mostly directed to Tehran and Mashhad[3]. In 2019, Shahrekord Airport registered only 560 domestic flights, which is a decrease compared to previous years.
In the surrounding provinces, Isfahan and Khuzestan have bigger airports with more flights. For example, Isfahan Airport, as one of the most important airports in the region, carries out numerous domestic and international flights. Ahvaz airport is one of the busiest airports in the south of the country.

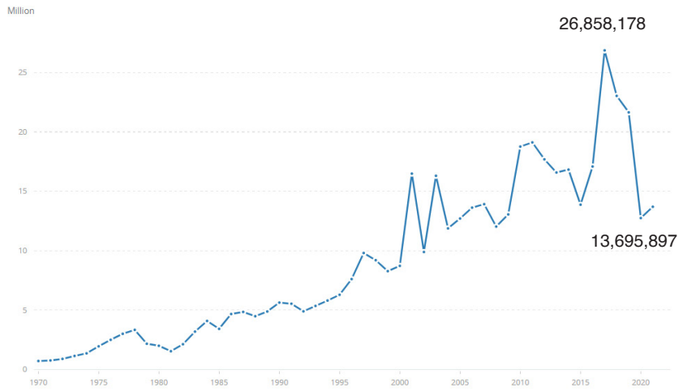


Figure 4.4: Air transport, passengers carried - Iran, Islamic Rep.

Figure 4.5: Iran Air route map

3. Mashhad is the second-most-populous city in Iran, located in the relatively remote north-east of the country about 900 kilometres from Tehran.

Figure 4.4. Source: International Civil Aviation Organization, Civil Aviation Statistics of the World and ICAO staff estimates.

Figure 4.5. Iran Air route map, from May/June 2017 edition of inflight magazine “Homa”.

4.1.3. Transportation (Communication Routes)

The network of communication routes can be categorized into three main types: primary asphalt roads, secondary gravel roads, and dirt roads. Additionally, the most important access routes to the region benefit from hot asphalt coverage. The main access routes to the Chelgerd-Dimeh tourism system are as follows:
1: Shahrekord - Farsan - Babaheydar - Chelgerd - Dimeh Spring
2: Shahrekord - Farsan - Babaheydar - Na’l Ashkenal Junction - Gholamabad - Dimeh Spring
3: Shahrekord - Khuye - Haruni - Morghomalk - Soudjan - Dimeh Spring
4: Isfahan - Fereydunshahr - Dimeh Spring
5: Masjed Soleiman - Bazoft - Chelgerd - Dimeh Spring

According to the statistical yearbook of 2016 for the province of Chaharmahal and Bakhtiari, 83% of the province’s communication network consists of main roads. Notably, this proportion was only 60% in 2006. More detailed information regarding the province’s communication network can be observed in the following chart, table, and map.

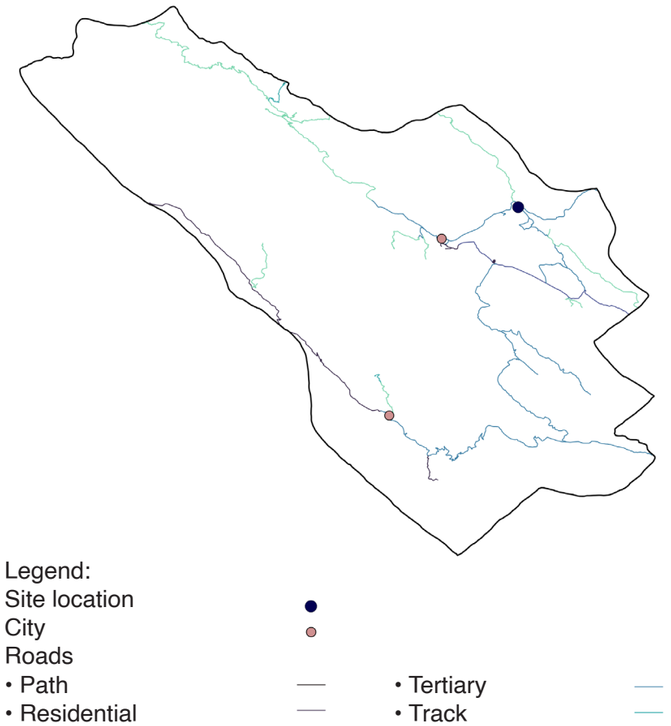


Figure 4.6. QGIS, Spatial data bank - Chaharmahal and Bakhtiari (2022) - “created by the author”
Map scale. 1:500000

Figure 4.6: Kohrang’s roads and routes

4.2. Characteristics of the Region

This region, due to its attractive and beautiful nature and suitable climate, has abundant facilities and capabilities for future development. This area has significant strengths in the tourism industry. These strengths can be utilized as a lever and indicator in the development process if complementary resources such as capital, planning, and human resources are employed.
The existing facilities in this area are as follows:

• Mountainous topography along with unique landscape and captivating scenery.
• Abundance of water in the region, including springs and rivers.
• Suitable climate and weather conditions in spring, summer, and early autumn.
• Biodiversity, especially in medicinal and forage plants.
• Convenient access to the region from Isfahan and Shahr-e kord.
• Extensive and varied areas suitable for tourism elements loading, including drinking water pipelines, telephone communications, mobile phone coverage, and in the region.
• Abundance of springs and water resources in the dry area.
• Existence of winter snow for skiing.
• Hunting grounds.
• Region's suitability for winter sports and mountaineering.
• Possibility of establishing accommodation and service-commercial-recreational and sports centers, etc.

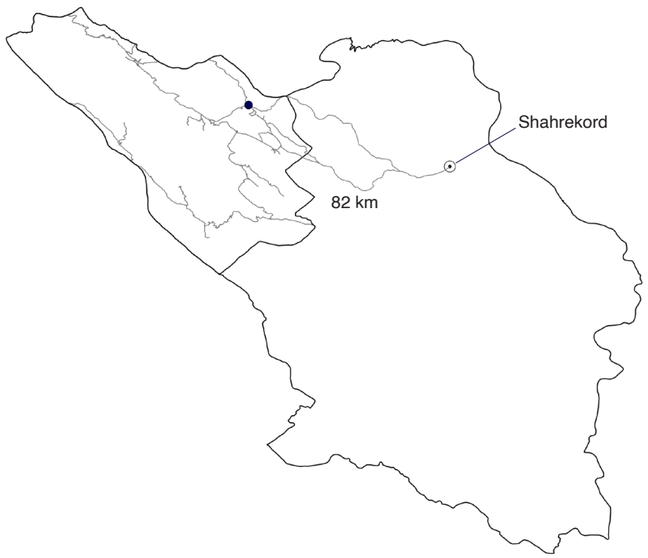


Figure 4.7: Province map and the site location

Figure 4.7. Distance to the capital of the province "Shahre Kord": 82 km - "created by author"
Map scale. 1:600000

Figure 4.8: Kohrang's rivers and topography

Figure 4.8. Site elevation above sea level: 2215 m - "created by author"
Map scale. 1:400000

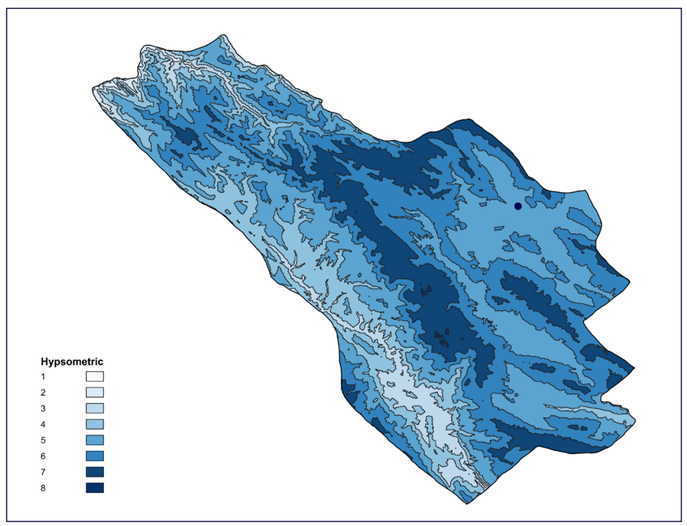


Figure 4.9: Hypsometric map

Figure 4.9. QGIS, Spatial data bank - Chaharmahal and Bakhtiari (2022) - "created by the author"
Map scale. 1:600000

4.2.1. Mapping: Kohrang's area (Cities and Villages)

At the time of the 2016 National Census, the province's population was 947,763 and the population of the capital city (Shahr-e Kord) was 190,441 which is about 20% of the population of the province.
The population of Kohrang's region is about 51,535 people.

There are about 280 villages in Kohrang's area. The villages of Sar Aghasid (1,698 people), Morz (1,201 people), and Khoye (1,026 people) were the most populated villages of this region in 2016.

Figure 4.10: City of Chelgard

Figure 4.11: A village in Kohrang's region

Figure 4.10. ©Photo by Ahmad Riahi Dehkordi

Figure 4.11. ©Photo by Mohammad Rostami

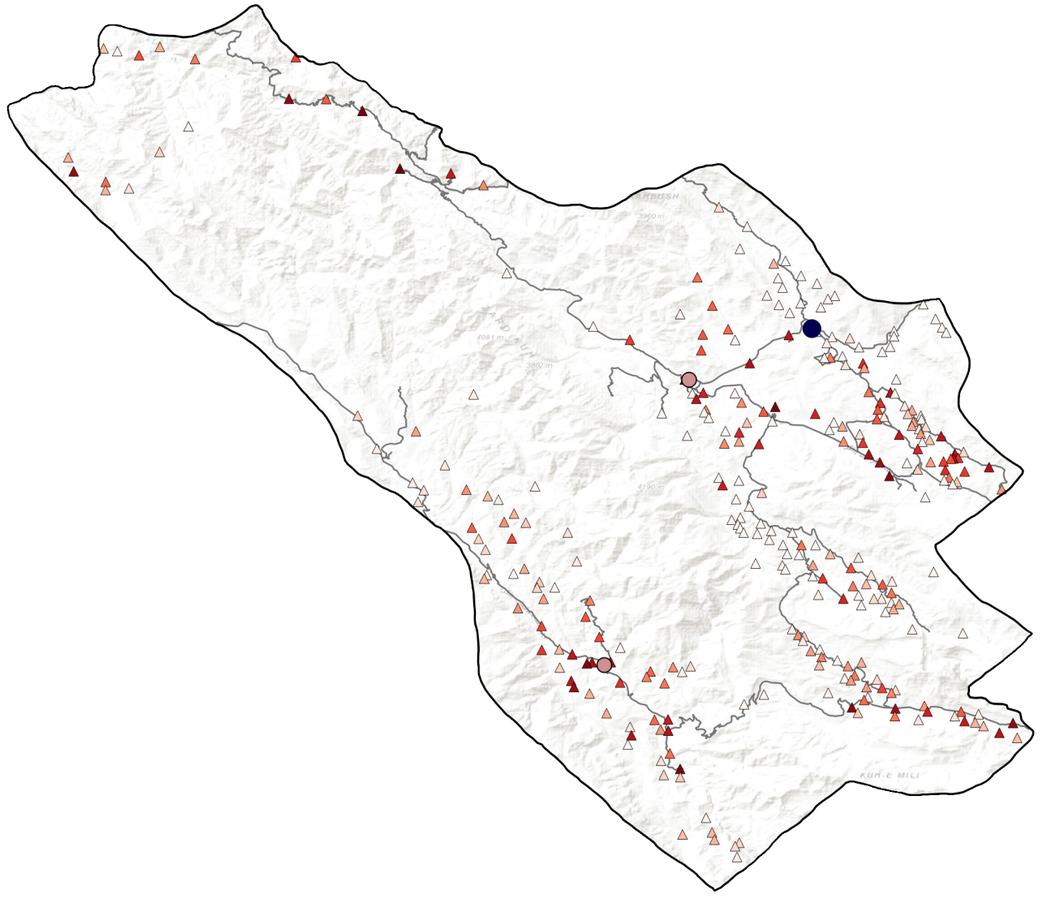


Figure 4.12. QGIS, Spatial data bank - Chaharmahal and Bakhtiari (2022) - "created by the author"
Map scale. 1:400000

Figure 4.12: Cities and villages

4.2.2. Mapping: Kohrang's area (Plains and Mountains)

Chaharmahal and Bakhtiari Province is located in the central part of the Zagros mountain range, between the inner foothills and Isfahan Province. This province has 16 high peaks exceeding 3,500 meters in elevation, including the 4,548 meter Zard Kuh.

Average elevation: 2,511 m

Chaharmahal and Bakhtiari is a mountainous region where nearly 76 percent of the area is composed of mountains and hills, and 24 percent consists of alluvial plains and plateaus.

Figure 4.13: Site location survey in winter

Figure 4.14: Site location survey in spring

Figure 4.13. Self-taken photo

Figure 4.14. Self-taken photo

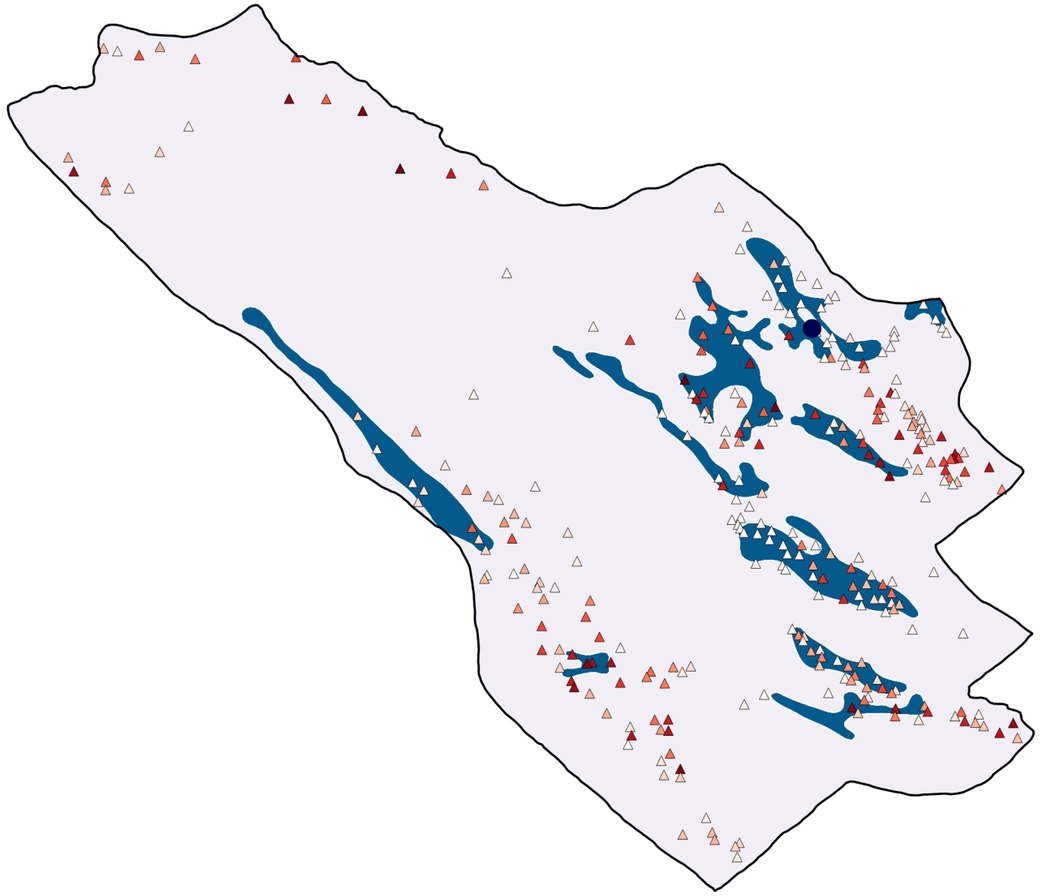


Figure 4.15. QGIS, Spatial data bank - Chaharmahal and Bakhtiari (2022) - "created by the author"
Map scale. 1:400000

Figure 4.15: Plains, Plateaus and Mountain

4.2.3. Mapping: Kohrang's area (Soil classification)

"Entisols are very poorly formed soils because they are developing over recent deposits of sediment in river valley floodplains. Since floods can occur at any time, these soils do not get a chance to mature and develop horizons. Adding fertility can make them productive, but must be repeated for every crop.
Inceptisols are similar to entisols in that they are forming over material that does not represent native bedrock or over bedrock that does not easily break down. Even where the soils are deep, they develop little fertility in their topsoil."[4]

Figure 4.16: The type of soil at the site location

4. Soil descriptions:
Miller, E. Willard 1995. "Soil Resources." Chapter 5 in Miller, E. Willard (ed.) A Geography of Pennsylvania. pp. 67-73.

Figure 4.16. Self-taken photo

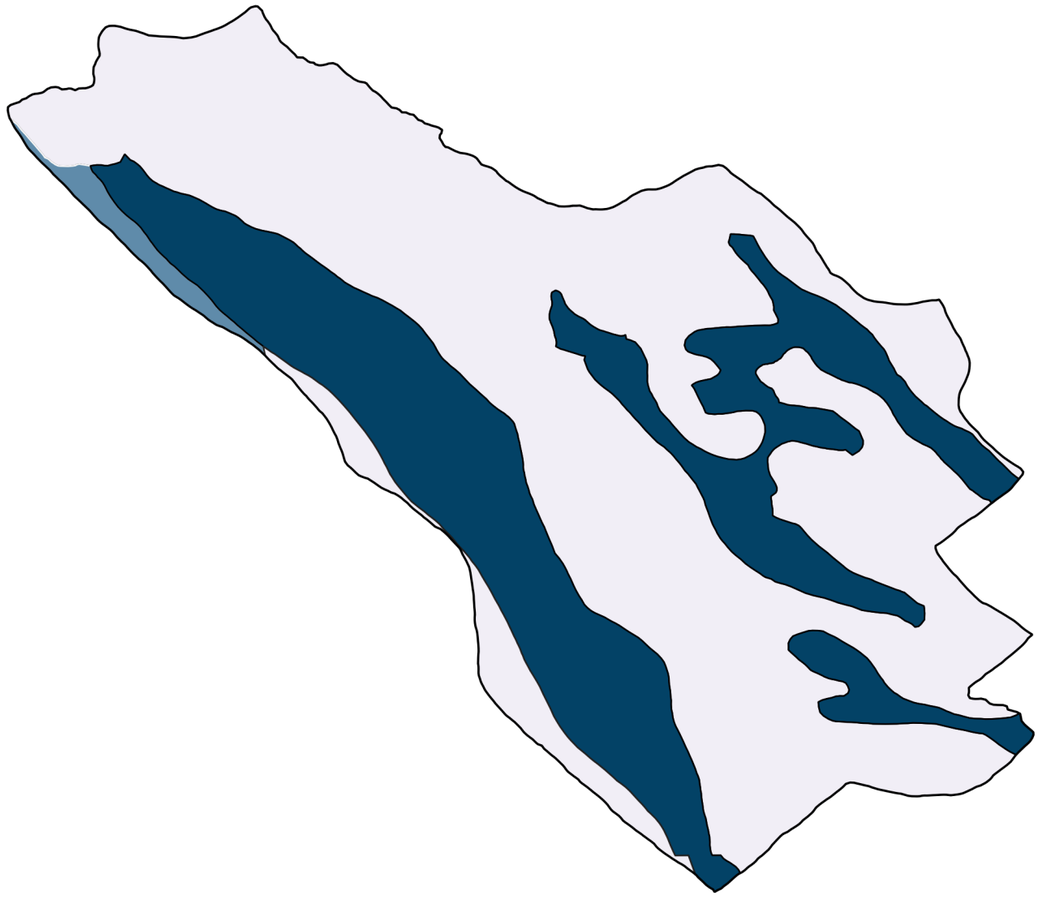


Figure 4.17. QGIS, Spatial data bank - Chaharmahal and Bakhtiari (2022) - "created by the author"
Map scale. 1:400000

Figure 4.17: Soil classification

4.2.4. Mapping: Kohrang's area (Land use)

The land use status in Chaharmahal and Bakhtiari Province can be summarized as follows:

• Agriculture: A significant portion of the land is used for cultivating crops and orchards.
• Pastures: Extensive areas are utilized for grazing livestock.
• Forests: Mountainous and highland areas are covered with natural forests.
• Residential Areas: Urban and rural areas include residential spaces and associated infrastructure.
• Industrial and Service Areas: Land used for workshops, factories, and public services.
• Barren Land: Rocky and steep mountainous regions that are unsuitable for agriculture and industry.

Figure 4.18: Aerial picture of the land use near Shahr-e Kord

Figure 4.18. Photo by Seyed Vali Shojaei Langari, Source

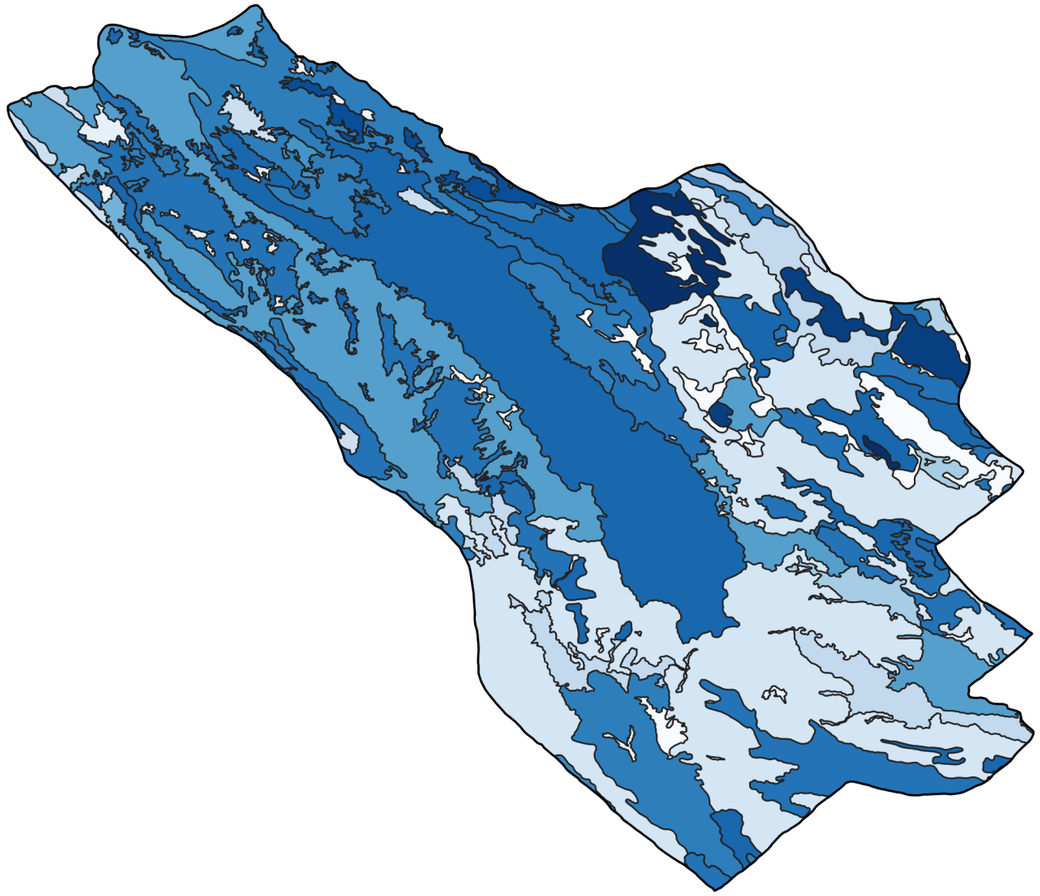


Figure 4.19. QGIS, Spatial data bank - Chaharmahal and Bakhtiari (2022) - "created by the author"
Map scale. 1:400000

Legend:

Agriculture
Private lands
Dense forest
Dry farming
Good range
Low forest
Mix (agri-private)
Mix (agri-dry farming)
Mix (agri-x)
Mix (good range)
Mix (low forest)
Mix (mod range)
Mix (poor range)
Mix (veri low forest)
Mod forest
Mod range
Poor range
Urban
Vero low forest
Wood land 1
Wood land 2

Figure 4.19: Land use

4.2.5. Mapping: Kohrang's area (Geology)

The study area, according to Eftekhar Nejad's classification (1979)[5], is part of the Zagros crushed and thrust belt, influenced by the Alpine-Himalayan orogeny. The lithological units present in the tourist sample area and its surroundings include:

Marly Limestone unit (om_2)
Dolomitic Limestone unit (EO)
Shales (JK)
Jurassic Limestone (J_1)
Salt and Marl unit of the Paleozoic (E_2)
Oligo-Miocene Marls (OM_3)
Cretaceous Limestone (K)
Bakhtiari Conglomerate (PL)
Permian Fusulinid-bearing Limestone (P)
Alluvial deposits (Qa_1, QT_1, QT_2)

The Cretaceous limestones cover the largest area, while the alluvial deposits (Qa) cover the smallest area.

Figure 4.20: Site survey

5. Eftekhar Nejad, J. (1979). Separation of different parts of Iran in terms of construction status and relationship with sedimentary basins

Figure 4.20. Self-taken photo

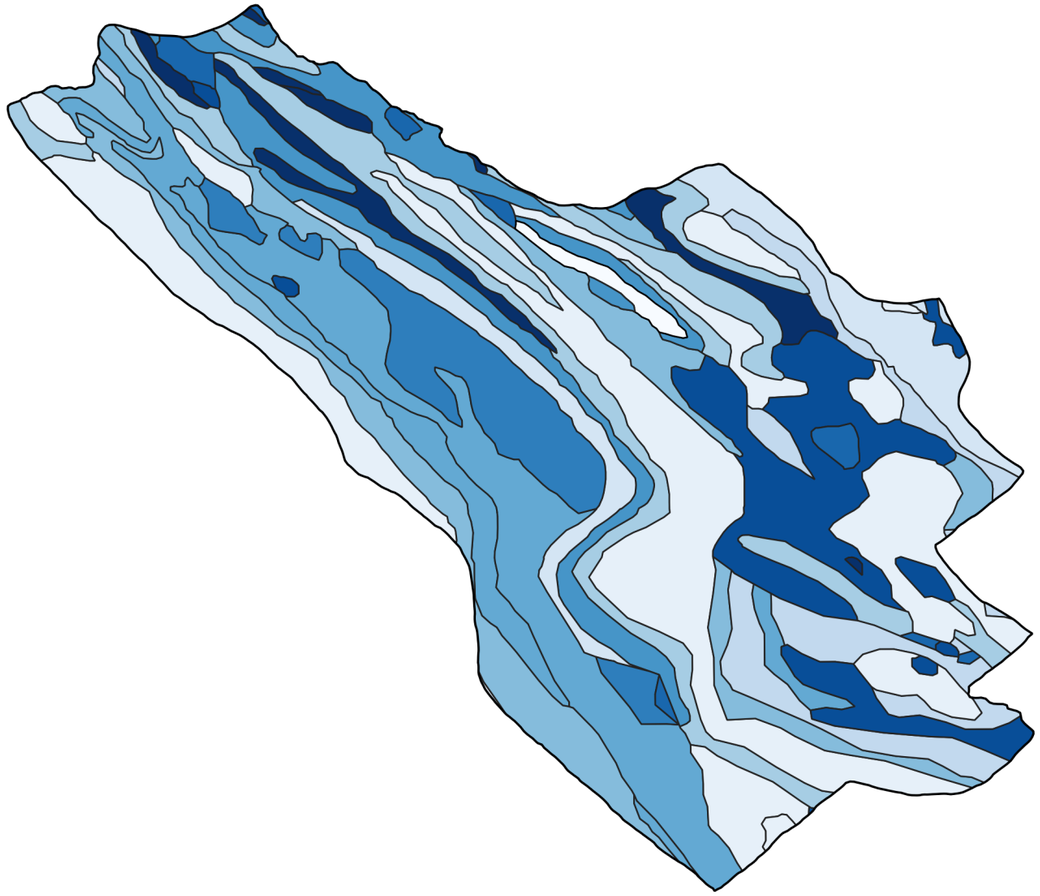


Figure 4.21. QGIS, Spatial data bank - Chaharmahal and Bakhtiari (2022) - "created by the author"
Map scale. 1:400000

Legend:

Cambrian
Cretaceous
Early Cretaceous
Eocene
Jurassic-Cretaceous
Late Cretaceous
Miocene
Permian
Pliocene
Precambrian
Quaternary
Trassic

Figure 4.21: Geology

4.2.6. Mapping: Kohrang's area (Erosion)

"The mean annual soil erosion in Iran was found to be to 16.5 (t / ha.yr) and the total annual soil loss in Iran is about 2.7 billion tons. Erosion was found high in most parts of the country in the north, west, and southwest are high (e.g. in Lorestan and Ilam provinces). Land-use changes are considered to be one of the main causes of soil erosion in the north and northwest of the country; an additional factor is the high rainfall figures found in the same areas."[6]

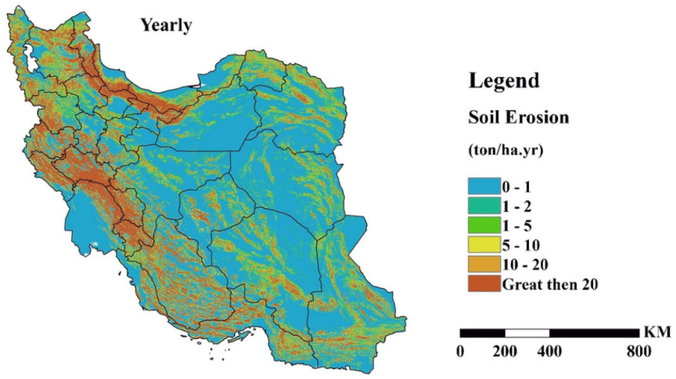


Figure 4.22: Iran soil erosion map (ton/ha.yr)

Chaharmahal and Bakhtiari province has a relatively high erosion rate among other provinces in the country, but the rainfall erosivity is not that high compared with others which means that other factors such as soil type, land use, and vegetation cover might also be significant contributors.

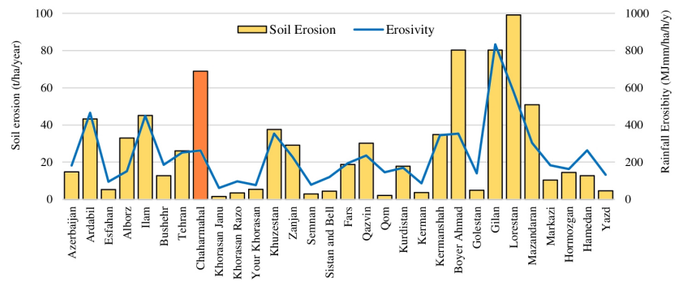


Figure 4.23: Average yearly soil loss and erosivity for each province

6. Mohammadi, S., Balouei, F., Haji, K., Khaledi Darvishan, A., & Karydas, C. G. (2021). Country-scale spatio-temporal monitoring of soil erosion in Iran using the G2 model. International Journal of Digital Earth, 14(8), 1019–1039.

Figure 4.22 - 4.23. Kabolizadeh, M., Rangzan, K. & Mohammadi, S. Increasing the accuracy of monthly and annual estimates of soil loss in Iran by considering the effect of snow cover in reducing rainfall erosivity. Arab J Geosci 15, 1344 (2022)

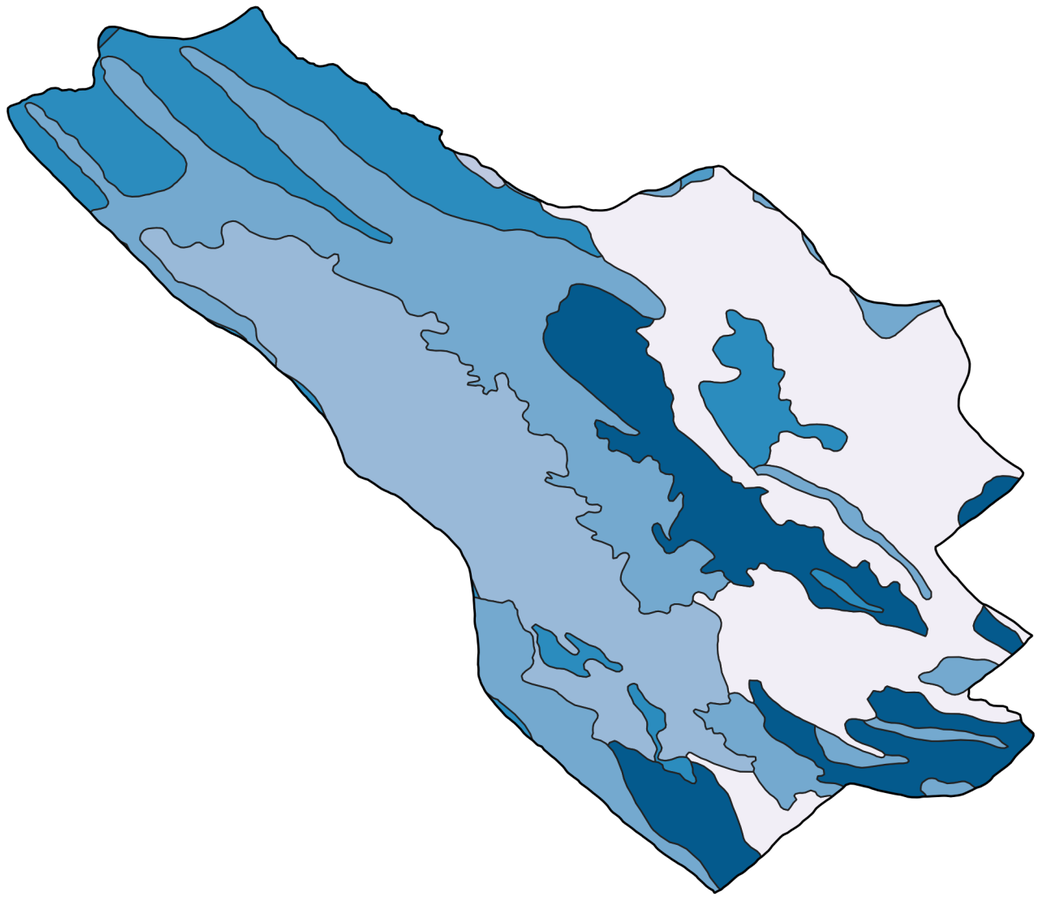


Figure 4.24. QGIS, Spatial data bank - Chaharmahal and Bakhtiari (2022) - "created by the author"
Map scale. 1:400000

Legend:

I
I + II
II + III
II + V
III
III + IV
IV
IV + V
V

Figure 4.24: Erosion

4.2.7. Mapping: Kohrang's area (Rainfall distribution)

The Kouhrang weather station is one of the rainiest and snowiest stations in Chaharmahal and Bakhtiari province.
It is the source of many rivers, including Karun, Karkheh[7], and Zayandeh Rud.
Rainfall at this station begins in October, with an average precipitation of 12.46 mm in October, increasing monthly with an average of 140.5 mm in November, 246.1 mm in December, 210 mm in January, 223.5 mm in February, and 296 mm in March, resulting in a six-month rainy season that continues until April.
During the spring and summer seasons, this area transforms into a lush region with a pleasant climate. From December to late April, due to the heavy snowfall and the number of freezing days, the area has the potential to develop ski slopes and facilities related to winter sports.

Figure 4.25: Bidekan dam

Figure 4.26: Snow situation in the region in January

7. The river Karkheh originates in the central zone of the Zagros mountain range, which is the boundary between the Iranian platform and the large alluvial plain of Iraq.

Figure 4.25. Bidkan dam is built next to Harouni city in Chaharmahal and Bakhtiari province on the "Sir valley" river. Self-taken photo

Figure 4.26. Self-taken photo

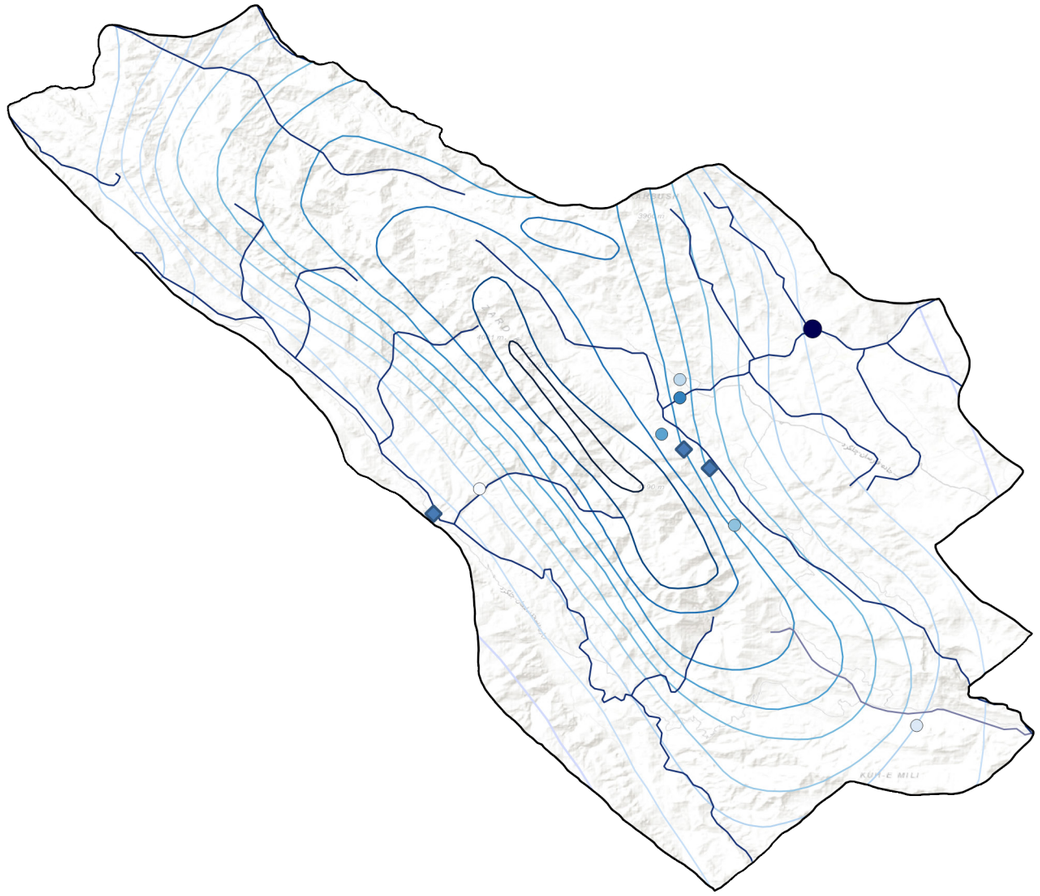


Figure 4.27. QGIS, Spatial data bank - Chaharmahal and Bakhtiari (2022) - "created by the author"
Map scale. 1:400000

Figure 4.27: Anual rainfall distribution

4.2.8. Mapping: Kohrang's area (Rivers and flood)

"The Kouhrang region in Chaharmahal and Bakhtiari province is prone to severe flooding due to heavy snow and rain.
Some of the significant flood events in this area are as follows:

February 2006: This event saw heavy rainfall amounting to 157.4 mm, resulting in severe flooding in the Kouhrang region.
December 2012: Heavy rains during this month also caused significant flooding, impacting various parts of the county.
In 2019, heavy rains again led to severe floods in different areas of Kouhrang, causing extensive damage to infrastructure and residential buildings.
In recent years, the region has experienced multiple instances of severe flooding due to heavy snow and rainfall. For example, in 2022, heavy rains led to widespread flooding, causing significant problems for the residents of this region."[8]

Figure 4.28: Dime river in Spring

8. Najafabadi, S., Farajzadeh, M., Geography and Planning Fall (2012) No. 45.
Analysis of synoptic conditions of flood occurrence during heavy rains (Kohrang city)

Figure 4.28. Self-taken photo

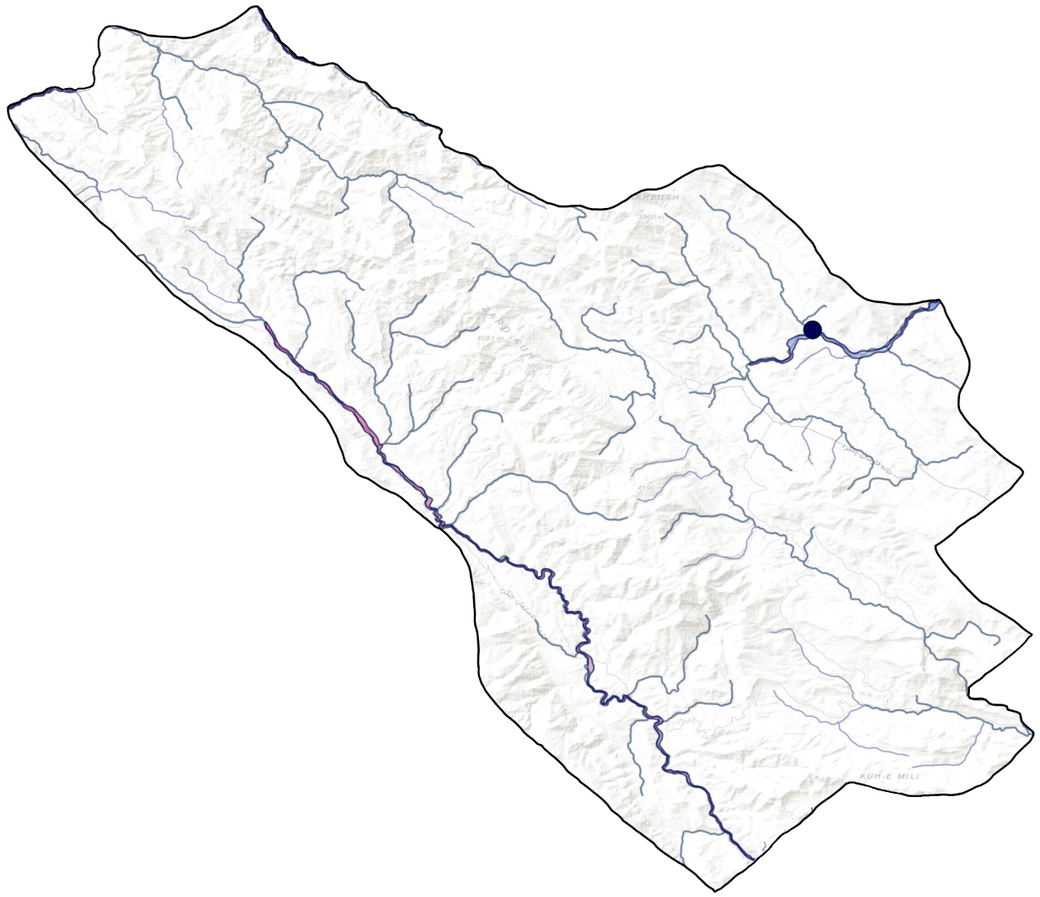


Figure 4.29. QGIS, Spatial data bank - Chaharmahal and Bakhtiari (2022) - "created by the author"
Map scale. 1:400000

Figure 4.29: Rivers and flood

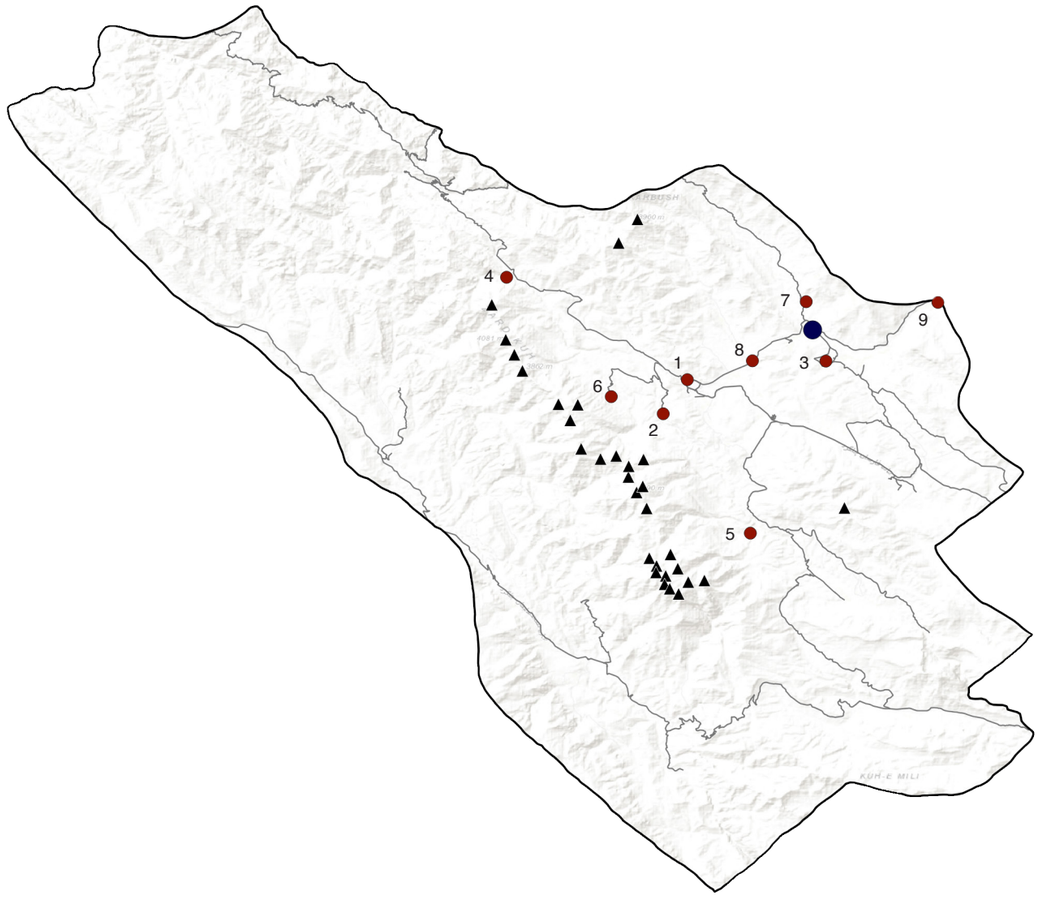
4.2.9. Natural and Artificial effects of the land

In general, the structural nature and the role and function of the natural and human attractions located in the site in question can be summarized as described in the following table, considering the size, distance, type and access method.

Row	Name of Attraction	Type of Attraction	Role and Function	Distance to the Site	Quality of Axis	Relative Position
1	Chelgard	Point	Tourist center	14 km	Asphalt	Southwest
2	Kohrang's waterfall	Point - Flow	Tourist point	18 km	Gravel	South
3	Ghol-amabad Spring	Point - Flow	Tourist point	6 km	Asphalt	Southwest
4	Chama Ice-cave	Point - Plain	Tourist point	39 km	Asphalt - Gravel	Northwest
5	Marbere Spring	Point - Flow	Tourist point	38 km	Asphalt - Gravel	South
6	Koohrang Spring	Point - Flow	Tourist point	30 km	Asphalt - Gravel	Southwest
7	Laleh Plain	Plain	Tourist center	5 km	Asphalt	North
8	Mianrou-dan	Plain	Tourist center	8 km	Asphalt - Gravel	West
9	Soudjan Bridge	Point	Tourist point	19 km	Asphalt	Northeast
10	Zayandeh Roud River	Flow	Tourist axis	5 km	Gravel	South
11	Nomadic Road	Line	Tourist axis	1 km	Gravel	North
12	Zardkooh Peaks	Line - Plain	Tourist axis	20 km	Asphalt - Gravel	West

Figure 4.30: Phenomena and attractions around

Figure 4.30. Relative location and distance of the desired site to other natural and human phenomena and attractions around.



Legend:

Site location
Mountain peaks
Sight attractions
- 1 Chelgard
- 2 Kohrang's waterfall
- 3 Gholam abad Spring
- 4 Chama Ice-cave
- 5 Marbere spring
- 6 Kohrang spring
- 7 Laleh's plain
- 8 Mianroudan
- 9 Soudjan bridge

Figure 4.31. QGIS, Spatial data bank - Chaharmahal and Bakhtiari (2022) - "created by the author"
Map scale. 1:400000

Figure 4.31: Mountain peaks and sight attractions

4.3. Climate data

Due to its geographical location and diverse topography, Iran has a great variety of climates. In the following, Iran's climate has been analyzed based on the classification of the Köppen-Geiger system:

1. Desert climate (BWh and BWk)
• BWh (hot desert climate):
Regions: Central and southern Iran, including cities such as Yazd[9], Kerman[10] and parts of Lut desert[11].
• BWk (cold desert climate):
Areas: parts of the north and northeast of the deserts, such as the areas around Semnan[12].

2. Steppe climate (BSh and BSk)
• BSh (hot semi-arid climate):
Areas: around the central desert areas, extending to parts of southern Iran.
• BSk (cold semi-arid climate):
Areas: areas such as Mashhad and parts of the northeastern plateau.

3. Mediterranean climate (Csa and Csb)
• Csa (Mediterranean climate with hot summer):
Areas: Caspian coastal areas, including cities such as Rasht.
• Csb (Mediterranean climate with mild summer):
Areas: Higher altitudes near the Caspian Sea and some areas of Zagros.

4. Humid subtropical climate (Cfa)
Regions: A narrow strip along the coast of the Caspian Sea.

5. Continental climate (Dsa, Dsb, Dsc)
• Dsa (continental climate with hot summer):
Areas: higher altitudes in Alborz and Zagros mountains.
• Dsb (continental climate with mild summer):
Regions: Middle altitudes to the top of the mountains.
• Dsc (subpolar climate):
Areas: very high altitudes of Alborz and Zagros mountains, such as Damavand mountain[13].

6. Tundra Weather (ET)
Regions: the highest peaks of Alborz and Zagros, such as Damavand peak.

9. Yazd is a city in the Central District of Yazd province, Iran. Yazd is 270 km southeast of Isfahan.

10. Kerman is a city in the Central District of Kerman County, Kerman province, Iran.

11. The Lut Desert, widely referred to as Dasht-e Lut, is a salt desert located in the provinces of Kerman and Sistan-Baluchestan, Iran. It is the world's 33rd-largest desert.

12. Semnan is a city in the Central District of Semnan County, Semnan province, Iran. 216 km east of Tehran.

13. Mount Damavand is a dormant stratovolcano and is the highest peak in Iran and Western Asia.

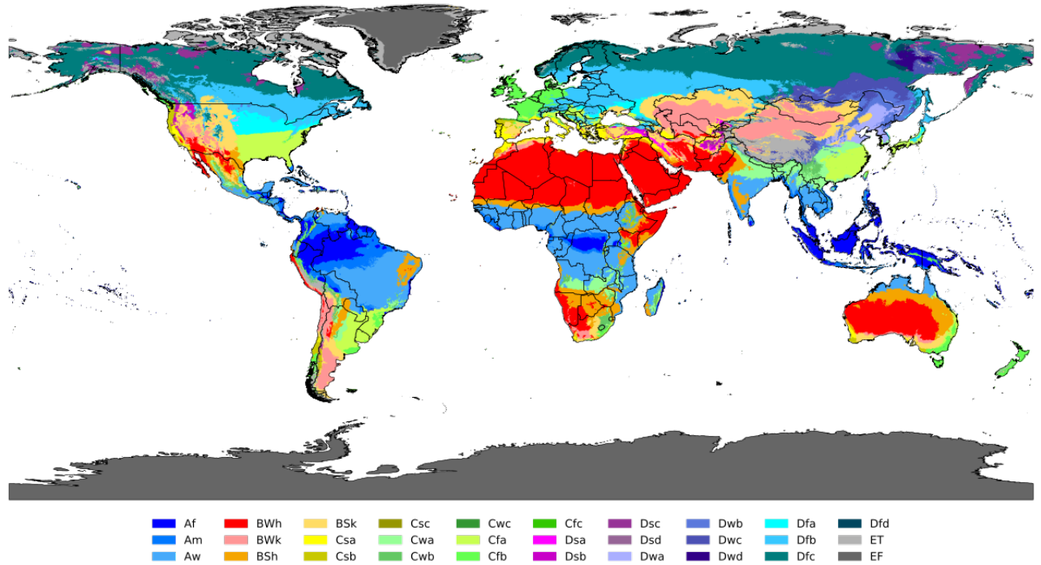


Figure 4.32: Köppen-Geiger climate classification map

The Köppen-Geiger climate classification system is widely used to categorize the world's climates based on temperature and precipitation patterns. According to this classification, Iran has a diverse range of climates due to its varied topography and geographical features.

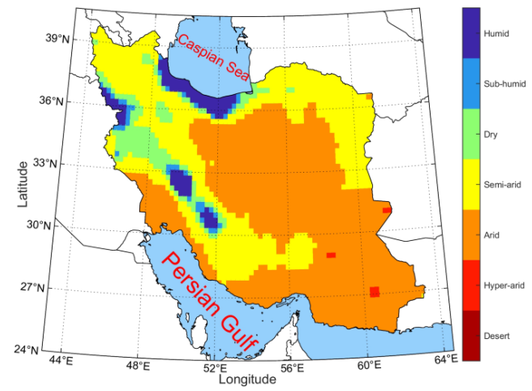


Figure 4.33: Climate types of Iran

"From 31 possible Köppen-Geiger climate types that may be found over the Earth, ten climate types were found in Iran, from which only "Bwh," "Bsk," "Csa," "Bsh," and "Bwk" with 35.98%, 23.69%, 17.03%, 15.70%, and 5.94% occupied area, respectively, cover very large parts of the country."[14]

14. Raziei, T. Climate of Iran according to Köppen-Geiger, Feddema, and UNEP climate classifications. Theor Appl Climatol 148, 1395–1416 (2022).

Figure 4.32. Beck, H.E., "Köppen-Geiger maps for 1901–2099 based on constrained CMIP6 projections". Scientific Data.

Figure 4.33. Raziei, T. Climate of Iran according to Köppen-Geiger, Feddema, and UNEP climate classifications.

4.3.1 Climate data: Morphing

Climate change has emerged as one of the most pressing global challenges, influencing various aspects of the natural environment and human society. Understanding the specific impacts of climate change on regional scales is crucial for developing adaptive strategies and mitigating potential risks.
This part focuses on analyzing the temperature trends and solar radiation patterns in Cheshme Dime, Iran, over a period extending from the present year to future projections for 2050 and 2080.
The climate data related to the years 2050 and 2080 were generated using “The Climate Change World Weather File Generator (CCWorldWeatherGen).”[15]

Location: Cheshme Dime, Iran
Longitude: 50.22 - Latitude: 32.50
Köppen–Geiger climate zone: Dsa
Summary of base temperatures for Iran:
• Heating Degree Days (HDD) base temperature: 20°C
• Cooling Degree Days (CDD) base temperature: 26°C

Figure 4.34: Site Location weather station

15. Morphing EPW / MTY for future climate scenario. (CCWorldWeatherGen)

Figure 4.34. Location of the analyzed point based on TMY file from Photovoltaic Geographical Information System.

2020[16]:
• Average yearly temperature: 8.5 °C
• Hottest yearly temperature (99%): 30.5 °C
• Coldest yearly temperature (1%): -13.3 °C
• Annual solar radiation: 1897.0 kWh/m2
• Percentage of diffuse horizontal solar radiation: 36.4 %

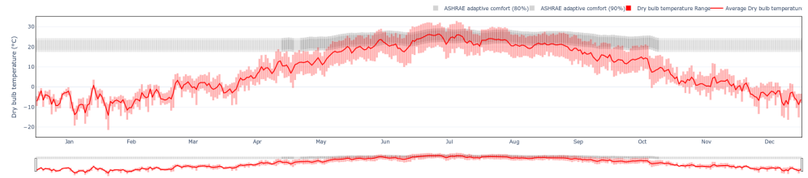


Fig 4.35: Dry bulb temperature (°C) - yearly chart

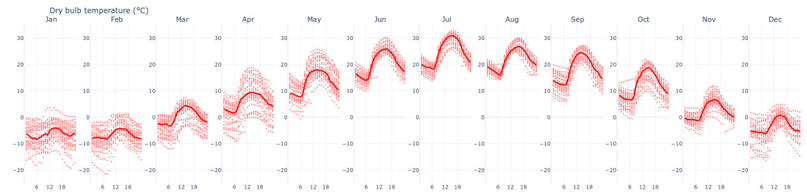


Fig 4.36: Dry bulb temperature (°C) - daily chart

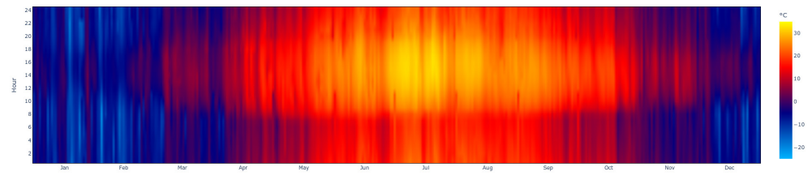


Fig 4.37: Dry bulb temperature (°C) - heatmap chart

Fig 4.38: Heating and Cooling Degree Days

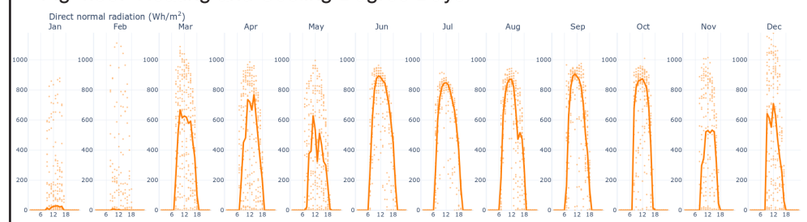


Fig 4.39: Direct normal radiation - Daily chart

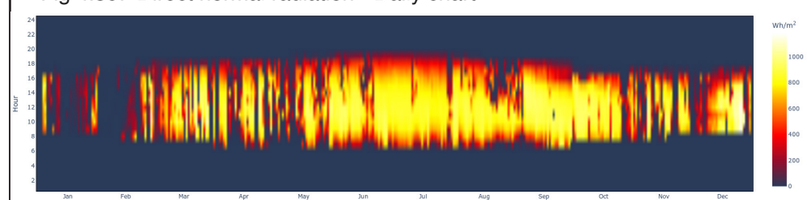


Figure 4.40: Carpet Plot (or Heat Map) - Irradiances

16. This file is based on data collected between 2000 and 2020.

Figure 4.35. Yearly Data: Outdoor Temperatures vs Indoor Comfort Temperatures (in grey)

Figure 4.36. Daily Data aggregated per Month showing typical daily profiles of temperature for each Month

Figure 4.37. Carpet Plot (or Heat Map) - Temperatures

Figure 4.38.
Monthly aggregated Data: HDD and CDD

Figure 4.39. Daily Data aggregated per Month showing typical daily profiles of Irradiances.

Figure 4.40. Carpet Plot (or Heat Map) - Irradiances

Figures generated by CBE Clima Tool from EPW file

Figure 4.41:

- Dec - Feb: 24 %. 0 observations have calm winds.
- Mar - May: 25 %. 1 observations have calm winds.
- Jun - Aug: 25 %. 1 observations have calm winds.
- Sep - Dec: 26 %. 3 observations have calm winds.

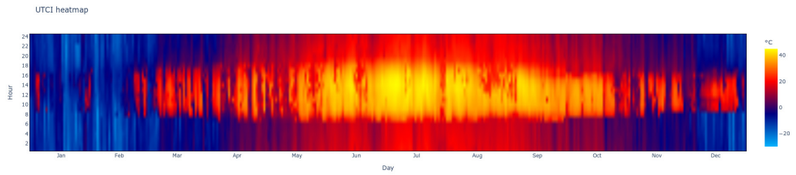


Figure 4.42: UTCI heatmap chart

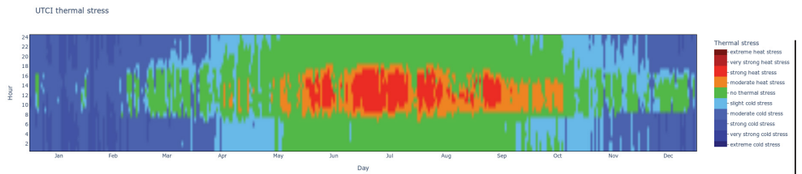


Figure 4.43: UTCI thermal stress chart

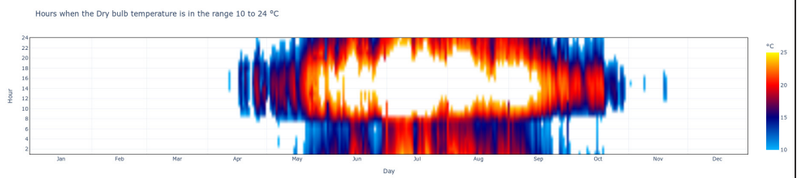


Figure 4.44: Potential for natural ventilation: 10 C < T out < 24 C

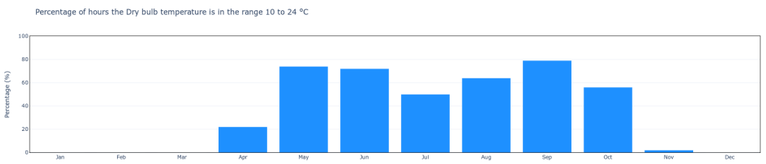


Figure 4.45: Natural ventilation bar chart

Figure 4.41. Seasonal Wind Rose, Wind Rose: Intensity, Direction and % of Time.

Figure 4.42. Universal Thermal Climate Index.

Figure 4.43. Universal Thermal Climate Index.

Figure 4.44. Potential for natural ventilation: 10 C < T out < 24 C

Figure 4.45. % of time by Month when Natural Ventilation is effective

Figures generated by CBE Clima Tool from EPW file

17. This file is based on data collected between 2000 and 2020.

2050[17]:

- Average yearly temperature: 11.1 °C
- Hottest yearly temperature (99%): 34.2 °C
- Coldest yearly temperature (1%): -12.0 °C
- Annual solar radiation: 1917.42 kWh/m2
- Percentage of diffuse horizontal solar radiation: 27.1 %

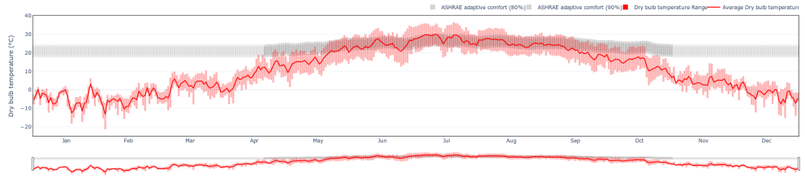


Fig 4.46: Dry bulb temperature (°C) - yearly chart

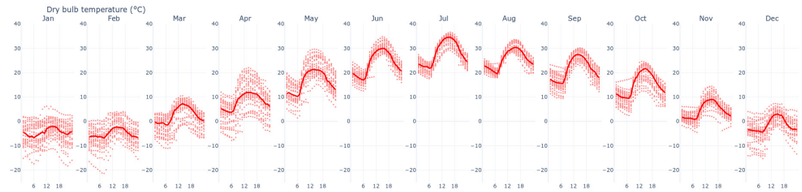


Fig 4.47: Dry bulb temperature (°C) - daily chart

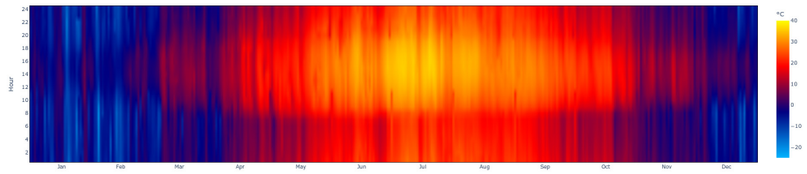


Fig 4.48: Dry bulb temperature (°C) - heatmap chart

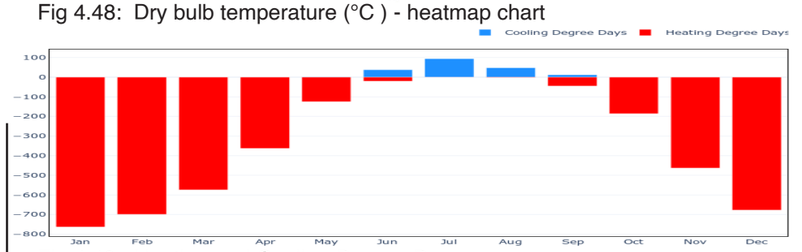


Fig 4.49: Heating and Cooling Degree Days

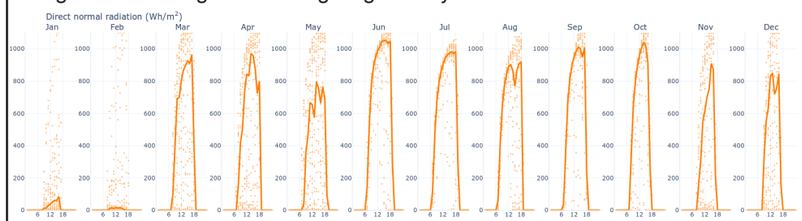


Fig 4.50: Direct normal radiation - Daily chart

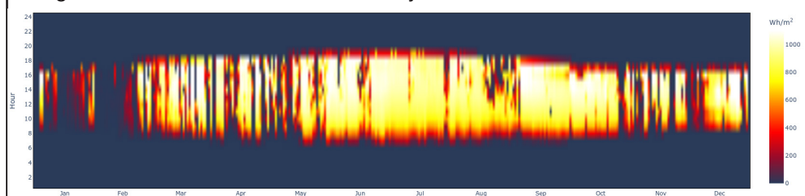


Figure 4.51: Carpet Plot (or Heat Map) - Irradiances

Figure 4.46. Yearly Data: Outdoor Temperatures vs Indoor Comfort Temperatures (in grey)

Figure 4.47. Daily Data aggregated per Month showing typical daily profiles of temperature for each Month

Figure 4.48. Carpet Plot (or Heat Map) - Temperatures

Figure 4.49. Monthly aggregated Data: HDD and CDD

Figure 4.50. Daily Data aggregated per Month showing typical daily profiles of Irradiances.

Figure 4.51. Carpet Plot (or Heat Map) - Irradiances

Figures generated by CBE Clima Tool from EPW file

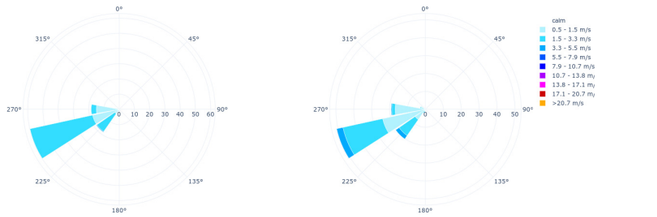


Figure 4.52:

- Dec - Feb: 24 %. 0 observations have calm winds.
- Mar - May: 25 %. 1 observations have calm winds.
- Jun - Aug: 25 %. 1 observations have calm winds.
- Sep - Dec: 26 %. 3 observations have calm winds.

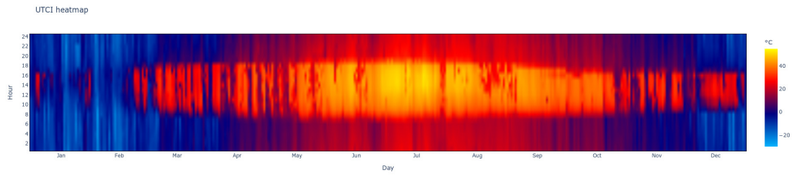


Figure 4.53: UTCI heatmap chart

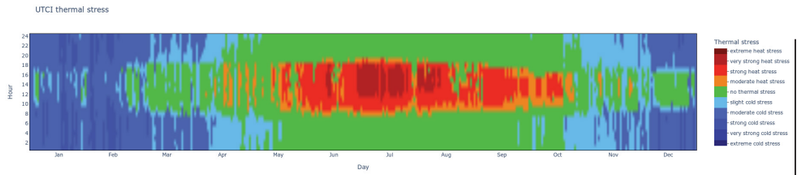


Figure 4.54: UTCI thermal stress chart

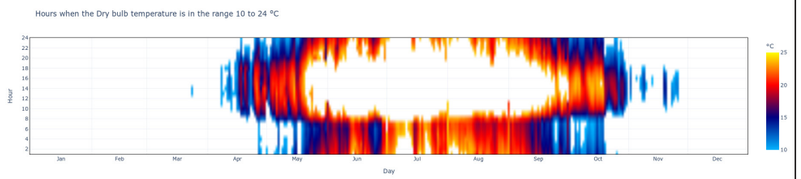


Figure 4.55: Potential for natural ventilation: 10 C < T out < 24 C

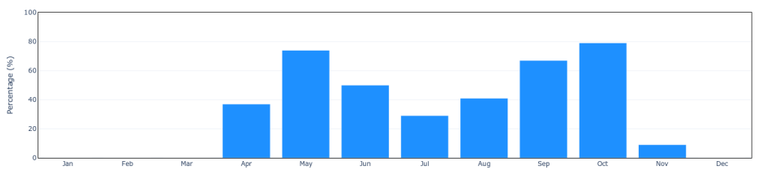


Figure 4.56: Natural ventilation bar chart

Figure 4.52. Seasonal Wind Rose, Wind Rose: Intensity, Direction and % of Time.

Figure 4.53. Universal Thermal Climate Index.

Figure 4.54. Universal Thermal Climate Index.

Figure 4.55. Potential for natural ventilation: 10 C < T out < 24 C

Figure 4.56. % of time by Month when Natural Ventilation is effective

Figures generated by [CBE Clima Tool](#) from EPW file

18. This file is based on data collected between 2070 and 2080.

Figure 4.57. Yearly Data: Outdoor Temperatures vs Indoor Comfort Temperatures (in grey)

Figure 4.58. Daily Data aggregated per Month showing typical daily profiles of temperature for each Month

Figure 4.59. Carpet Plot (or Heat Map) - Temperatures

Figure 4.60. Monthly aggregated Data: HDD and CDD

Figure 4.61. Daily Data aggregated per Month showing typical daily profiles of Irradiances.

Figure 4.62. Carpet Plot (or Heat Map) - Irradiances

Figures generated by [CBE Clima Tool](#) from EPW file

2080[18]:

- Average yearly temperature: 13.1 °C
- Hottest yearly temperature (99%): 36.7 °C
- Coldest yearly temperature (1%): -11.4 °C
- Annual solar radiation: 1940.11 kWh/m2
- Percentage of diffuse horizontal solar radiation: 26.2 %

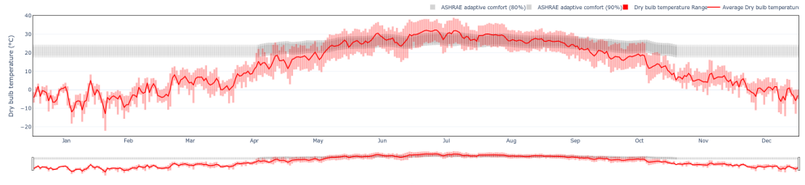


Fig 4.57: Dry bulb temperature (°C) - yearly chart

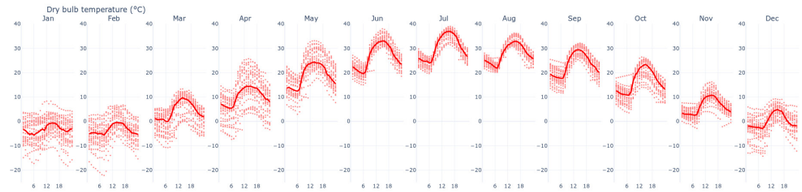


Fig 4.58: Dry bulb temperature (°C) - daily chart

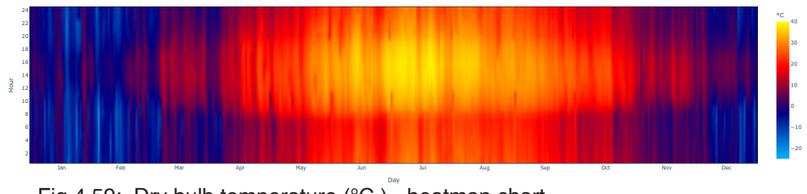


Fig 4.59: Dry bulb temperature (°C) - heatmap chart

Fig 4.60: Heating and Cooling Degree Days

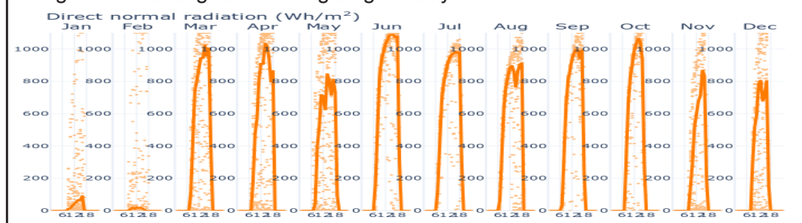


Fig 4.61: Direct normal radiation - Daily chart

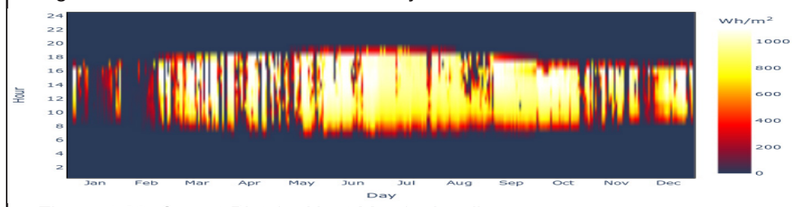
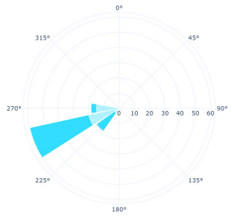
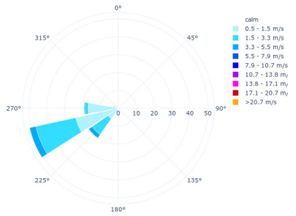


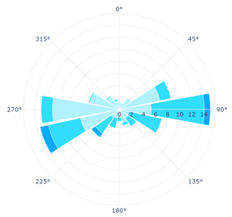
Figure 4.62: Carpet Plot (or Heat Map) - Irradiances



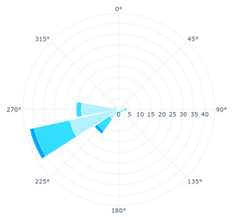
Dec - Feb



Mar - May



Jun - Aug



Sep - Dec

Figure 4.63:

- Dec - Feb: 24 %. 0 observations have calm winds.
- Mar - May: 25 %. 1 observations have calm winds.
- Jun - Aug: 25 %. 1 observations have calm winds.
- Sep - Dec: 26 %. 3 observations have calm winds.

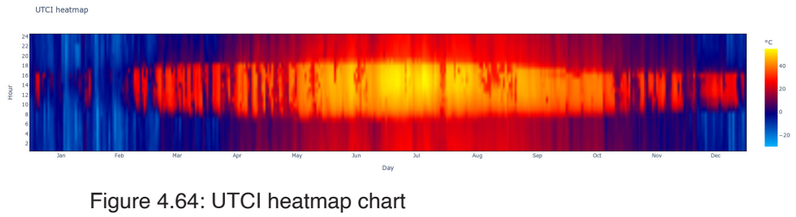


Figure 4.64: UTCI heatmap chart

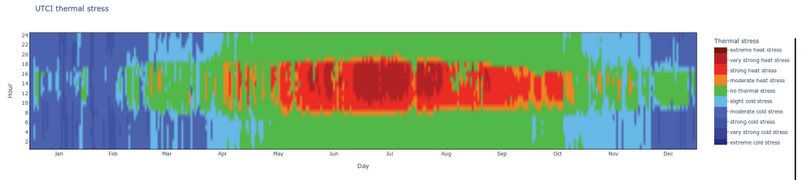


Figure 4.65: UTCI thermal stress chart

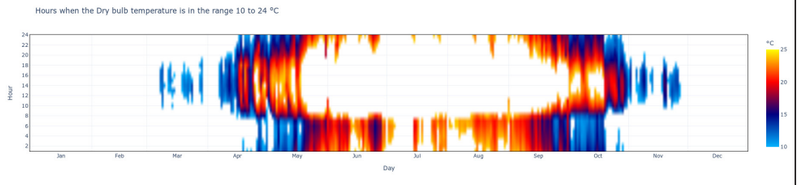


Figure 4.66: Potential for natural ventilation: 10 C < T out < 24 C

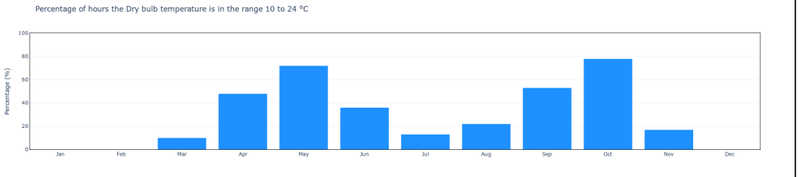


Figure 4.67: Natural ventilation bar chart

Figure 4.63. Seasonal Wind Rose, Wind Rose: Intensity, Direction and % of Time.

Figure 4.64. Universal Thermal Climate Index.

Figure 4.65. Universal Thermal Climate Index.

Figure 4.66. Potential for natural ventilation: 10 C < T out < 24 C

Figure 4.67. % of time by Month when Natural Ventilation is effective

Figures generated by CBE Clima Tool from EPW file

• Annual average temperature:
The annual average temperature has increased steadily over the years. In 2020, the temperature will reach 8.5°C, increase to 11.1°C in 2050, and reach 13.1°C in 2080. This trend indicates significant warming of the region over decades.

• Extreme temperatures:
Both the hottest annual temperature (99%) and the coldest annual temperature (1%) show significant increases. In 2020, the hottest annual temperature will reach 30.5°C, increasing to 34.2°C in 2050 and 36.7°C in 2080. Likewise, the coldest annual temperature increases from -13.3°C in 2020 to -11.4°C in 2080. These changes show that warmer temperatures are becoming more intense and colder temperatures are becoming less intense.

• Cumulative annual horizontal radiation:
Cumulative annual horizontal radiation gradually increases from 1897.0 kWh/m2 in 2020 to 1940.11 kWh/m2 in 2080. This indicates an overall increase in access to solar energy in the region during the study period.

• The percentage of scattered horizontal radiation:
The percentage of scattered horizontal radiation shows a decreasing trend. In 2020, this radiation constitutes 36.4% of the total solar radiation, which will decrease to 27.1% in 2050 and 26.2% in 2080. This decrease indicates a movement towards more direct light, which can affect local weather patterns and ecosystem dynamics.

• Climate warming:
The continuous increase in temperature indicates the climate warming trend in Cheshme Dimeh, Iran. This could lead to changes in agricultural practices, changes in access to water resources, and increased heat-related risks.

• Extreme weather events:
An increase in extreme temperatures indicates an increase in the frequency of heat waves and a decrease in extreme cold events. This can affect infrastructure resilience, energy demand and ecosystem dynamics.

• Solar Energy Dynamics:
Changes in solar radiation patterns indicate possible changes in energy availability and distribution. This can affect the adoption of solar energy technologies and influence energy planning and management strategies.

4.4. S.W.O.T

Strengths:

• The presence of mountainous topography and unique, beautiful natural landscapes in the region, suitable climate and weather, abundant water, vast plains, diverse vegetation, etc., support the development of ecotourism in the region.

• The presence of high elevations and peaks suitable for sports and recreational activities such as skiing and mountaineering, easy and convenient access to these areas for tourists.

• The presence of numerous rivers and springs, having a calm and quiet environment especially for city dwellers for rest, relaxation, and recreation.

• The presence of customs, local and traditional culture, as well as historical and scenic sites, some of which have remained from the past.

• High potential and capabilities of the area for transforming into a model tourism region, hosting various elements of the plan, and offering facilities for winter sports and aerial sports.

• The region is equipped with infrastructure such as water, electricity, telecommunications, and public services.

• The presence of various governmental and non-governmental institutions in Isfahan and Shahr-e Kord to support and provide facilities and services to the model region.

• The presence of cold-climate products, agricultural products, and a suitable market for selling these agricultural products to tourists.

- Natural-geographical factors
- Environmental factors
- Socio-cultural factors
- Physical-spatial factors and the state of infrastructure
- Economic factors

Figure 4.68: Winter snow at Koohrang's area

Figure 4.69: Moutainous topography of the area

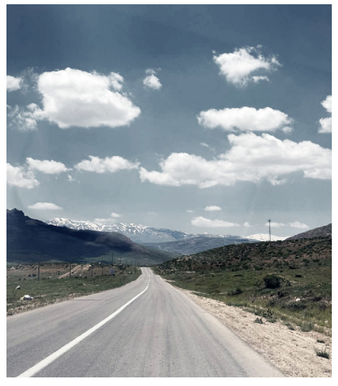


Figure 4.70 : Roads

Figure 4.71 : Koohrang spring

Figure 4.68. Self-taken photo

Figure 4.69. Self-taken photo

Figure 4.70. Self-taken photo

Figure 4.71. Self-taken photo

All photos highlight the area's strengths.

Weaknesses:

• The region's proneness to earthquakes, the severely cold and unsuitable climate in winter, steep paths, numerous icy days, and poor quality of local access to attractions outside the village.

• The lack of specialized and trained personnel in these areas, the uneven distribution of tourists throughout the year (low density in winter)

• Conflicts and differences between the culture of tourists and the local villagers

• Limited hospitality facilities in prominent ecotourism locations, weaknesses in transportation facilities, accommodation, and infrastructure.

• The lack of an administrative authority in tourism and ecotourism in the region.

• The villagers' lack of familiarity with tourism and the lack of training on how to interact with tourists.

• Economic stagnation, seasonal unemployment, migration leading to depopulation, and weaknesses in infrastructure and public service systems in the region.

Figure 4.72 : Guide boards

Figure 4.73 : Information office

• Natural-geographical factors
• Socio-cultural factors
• Physical-spatial factors and the state of infrastructure
• Economic factors

Figure 4.72. Self-taken photo

Figure 4.73. Self-taken photo

Both photos highlight the area's weaknesses.

Opportunities:

• The potential use of the region's water resources and the diversity of flora and medicinal plants in future development planning.

• The possibility of developing and expanding natural tourism (ecotourism) and agricultural tourism (agrotourism)

• The presence of a large population center of the country nearby, such as Isfahan, Shahrekord and other urban and rural centers in the vicinity. Increased motivation for travel and recreation among urban and suburban residents.

• Increased attention and support from national authorities for the development of rural tourism with a focus on employment generation and income generation

• provision of services and optimization of infrastructure in the region to prevent migration and improve the situation.

• Development of facilities and amenities, focusing on resource management, creating a foundation for investment.

Threats:

• Weakness in proper information dissemination and advertising to identify the region, and weaknesses in guide signs and road conditions to direct tourists.

• Lack of motivation among tourists to visit ecotourism resources and the destruction of these resources.The disappearance of traditional and local culture such as language, local customs, traditional attire due to the increase in tourists.

• The decrease in tourist numbers during peak tourism seasons due to the weakness and inadequacy of infrastructure.

• Natural-geographical factors
• Environmental factors
• Socio-cultural factors
• Physical-spatial factors and the state of infrastructure
• Economic factors

05 / 1

The Project
Overview

5-1.1. Site Introduction (Kohrang's resort village)

The project site covers an approximate area of 500 hectares, with a central core of 50 hectares, located in Kohrang County on a hill near the village of Qaleh Sabzi, which is part of the Tangzi rural district. It is situated 1 kilometer from the village of Dimeh, at the beginning of the Sudeh Jan to Kohrang road to the west, and the Gholam Abad to Kohrang road to the southwest.

The distance from this project site to the center of Kohrang County, the city of Chelgerd, is about 12 kilometers, and to the center of the province, the city of Shahrekord, is about 90 kilometers. The villages of Qaleh Sabzi and Dimeh are located within the project area, while the villages of Qiqaj and Haji Abad, as well as the Vahdat Park township, are within the project zone.

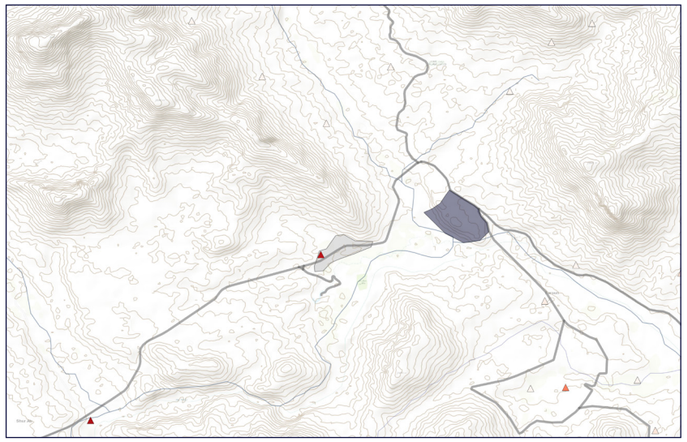


Figure 5.1 : Site location

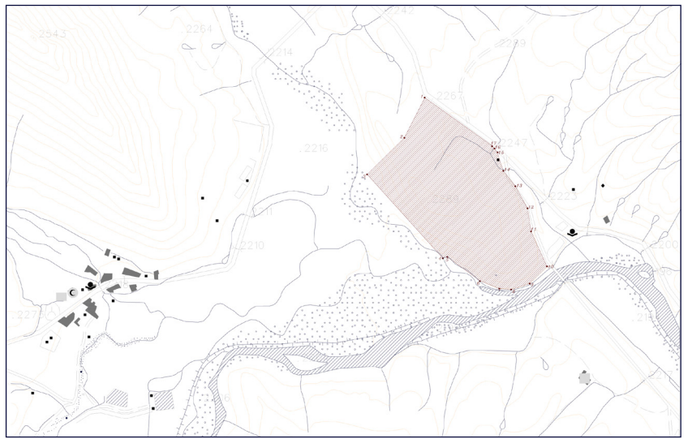


Figure 5.2 : Site location

Figure 5.1: QGIS, Spatial data bank - Chaharmahal and Bakhtiari (2022) - "created by the author"
Map scale. 1:25000

Figure 5.2: Map scale. 1.10000

5-1.2 Survey

The survey, including a photographic analysis of the site, was done during different periods: September 2023, December 2023, February 2024 ,and May 2024, to ensure a comprehensive evaluation of the data.

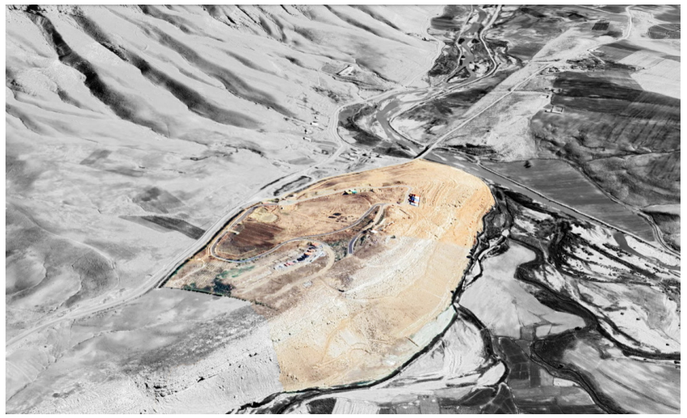


Figure 5.3: Aerial photo of the site

Figure 5.4 : Main accessibility road to the site

Figure 5.3. The areial photo was taken from Google Earth (2023).

Figure 5.4. All the photos in the site survey are taken by the authors.

Figure 5.5 : In-site accessibility roads and connection to different parts of the master plan.

Figure 5.6 : Some of the built private villas (typology 1), photographed in autumn

Figure 5.7 : Some of the built private villas (typology 2), photographed in winter

Figure 5.8 : Main view of the master plan facing to south-west, photographed in spring

Figure 5.9 : Main view of the master plan facing to south-west, photographed in winter

Figure 5.10: Agricultural fields located by the site location

Figure 5.11 : Temporary resting places and pre-built pergolas in different parts of the master plan.

Figure 5.12 : Roads situation in winter

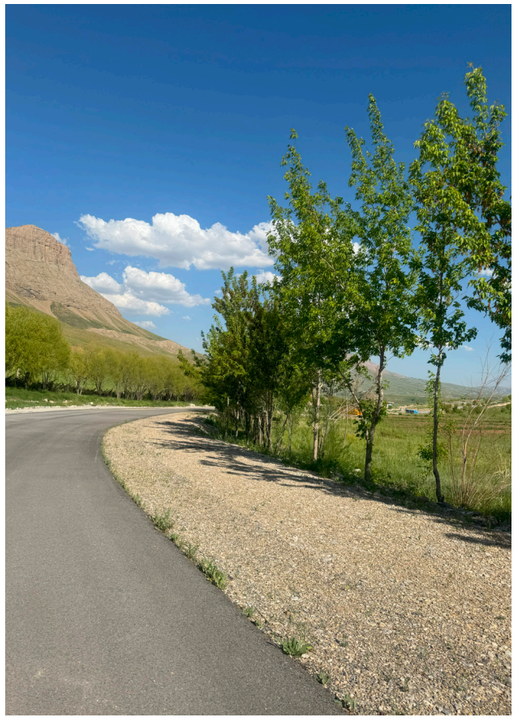


Figure 5.13 : In-site roads condition and pavements

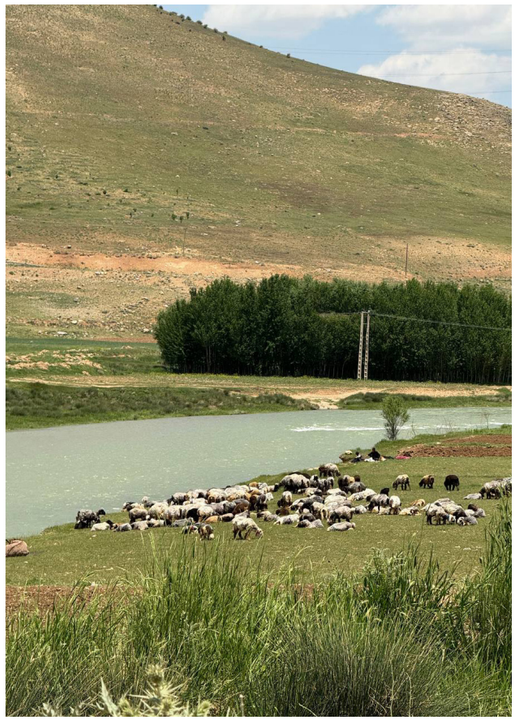


Figure 5.14 : Life by the river-side

Figure 5.15 : Diversity of vegetations in the site

Figure 5.16 : Another view from the site towards the rivers

Figure 5.17 : River flow at the beginning of spring

5-1.3 Functional Structures of the Complex

The Dashte Laleh Dimeh Tourist Area, with an area of 500 hectares, includes designated spaces within the plan, encompassing a central site and peripheral projects. The central core spans 50,000 square meters and includes a variety of spaces.

The necessary spaces within this complex, which have been planned and are executable in current situation, include:

A) Accommodation

- Hotel
- Private Villa
- Camping aea

B) Administrative, Service, and Commercial

- Restaurant
- Fast Food
- Supermarket
- Cafe
- Office building
- Parking

C) Recreational

- Water and Music Garden
- Entertainment area
- Farmland

D) Sports

- Skiing and Grass Skiing
- Hiking

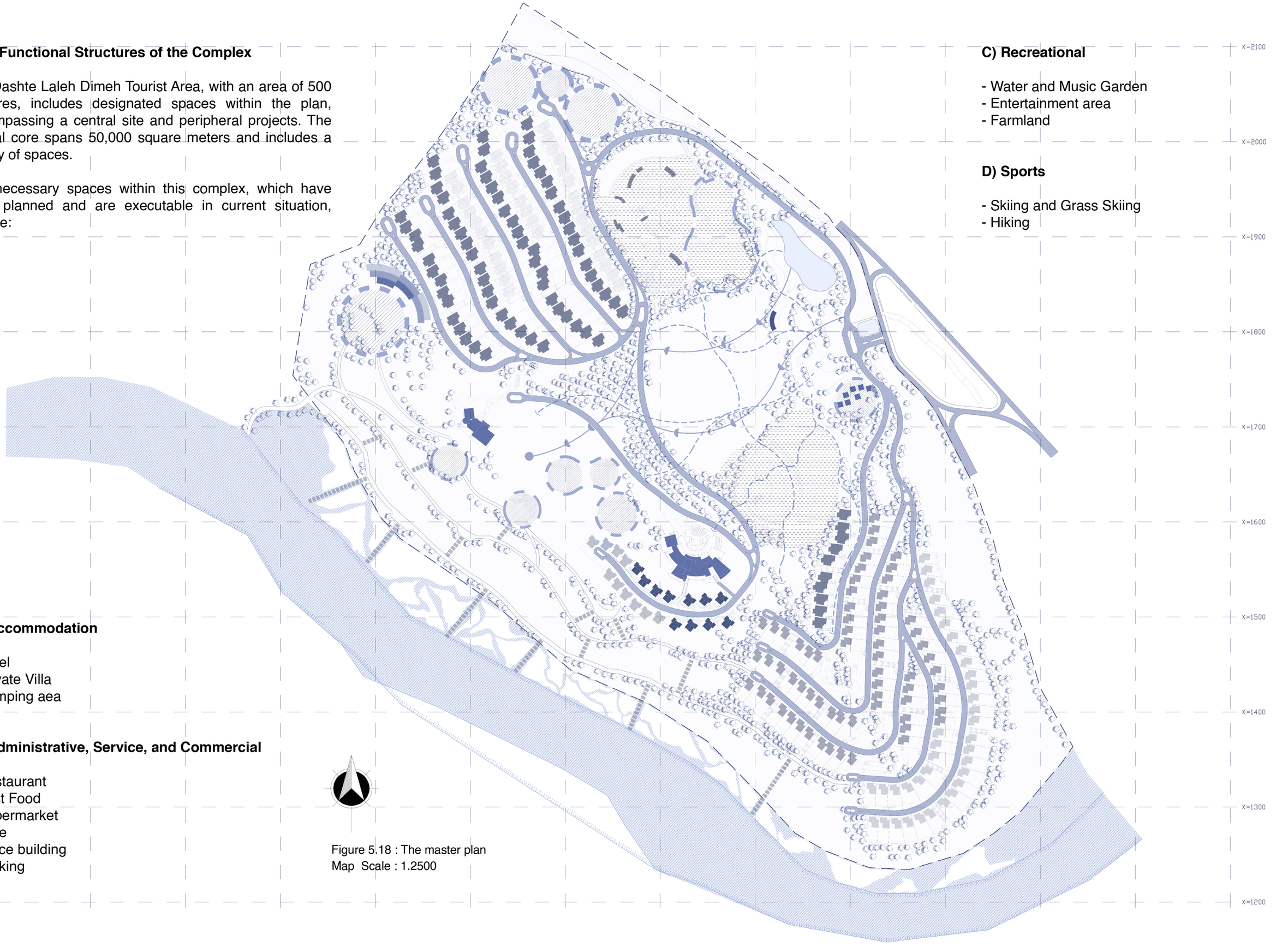


Figure 5.18 : The master plan
Map Scale : 1.2500

5-1.4. F

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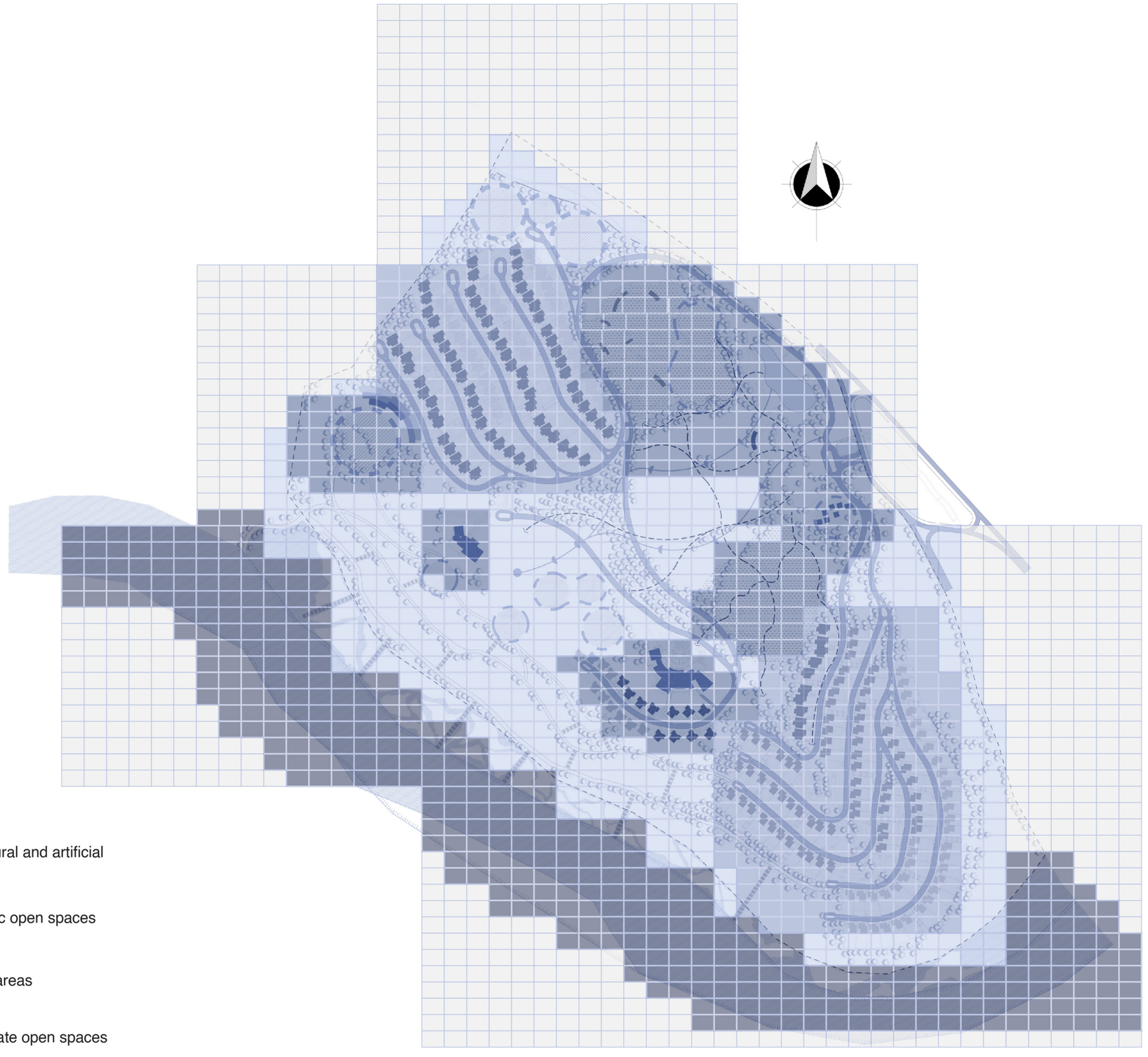


W Water resources - Natural and artificial

Pu Public buildings - Public open spaces

Gr Green spaces -Public areas

Pr Private buildings - Private open spaces

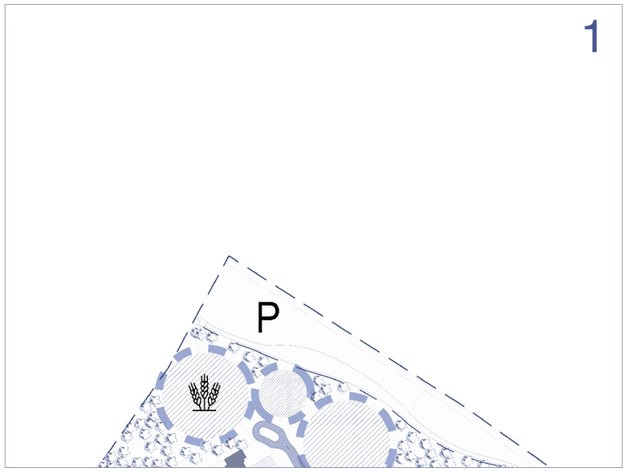


Figure 5.19 : Part 1 of designed master plan

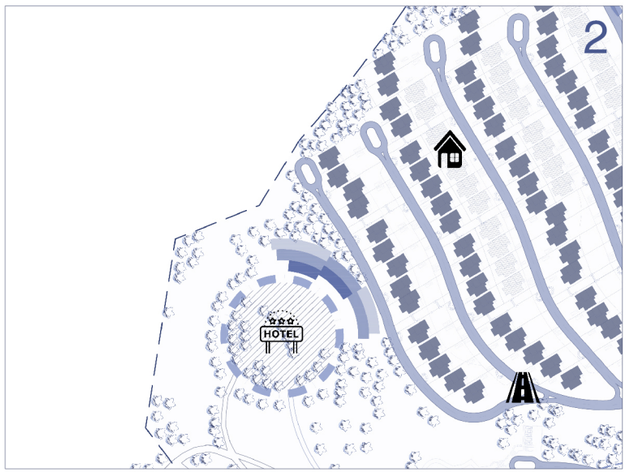


Figure 5.20 : Part 2 of designed master plan

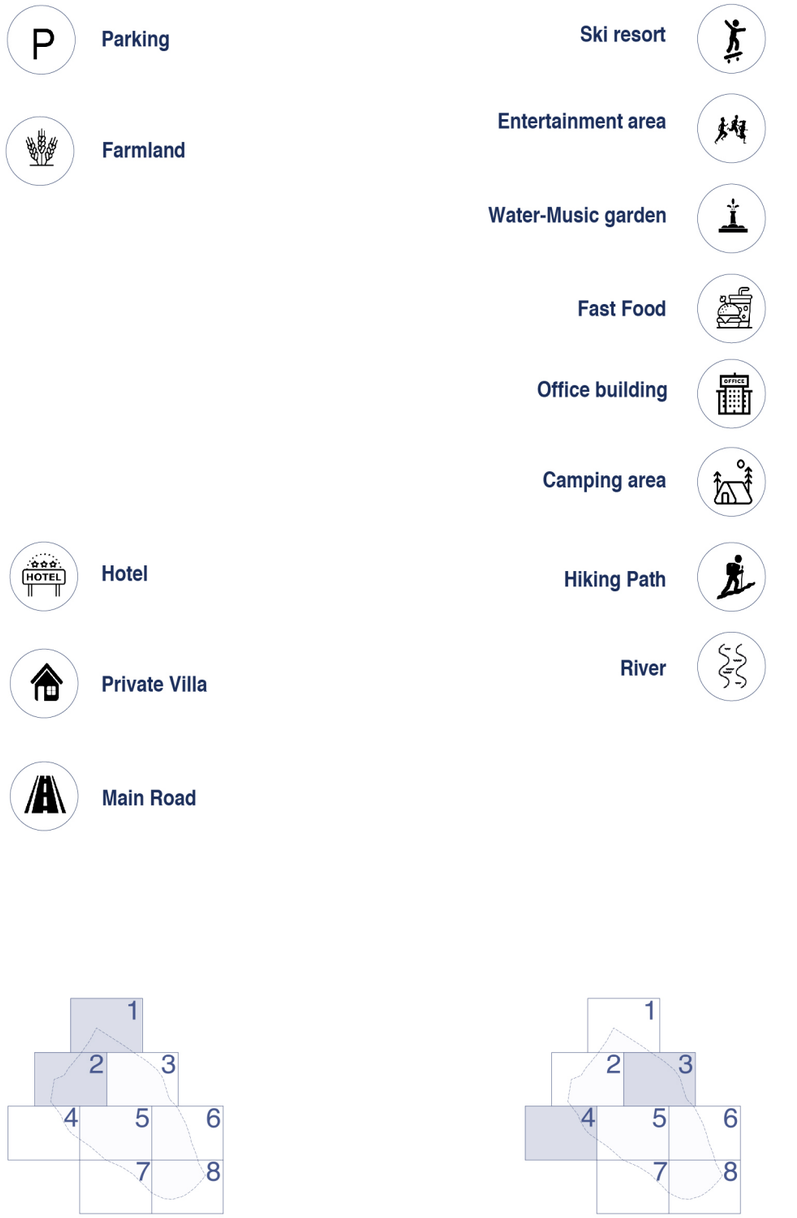


Figure 5.21 : Part 3 of designed master plan

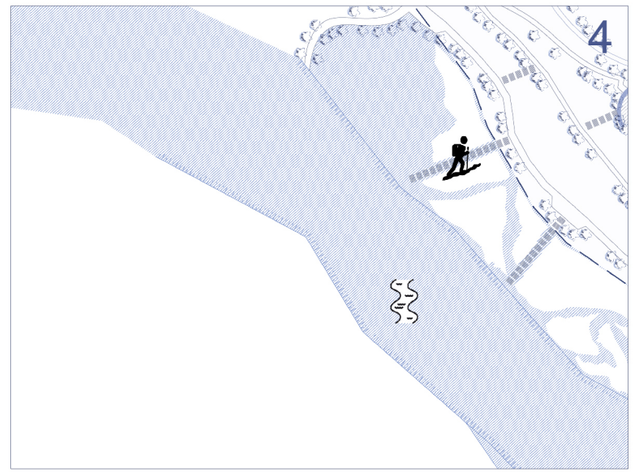


Figure 5.22 : Part 4 of designed master plan

Part 1:
This area includes parking and farmland as public facilities. Farmlands can be part of the local culture, allowing people to grow domestic foods and sell them to tourists. Improvement can include adding small shops and local markets to attract tourists interested in local food and culture.

Part 2:
A large part of this area contains private villas, serving as accommodations for mid-range and luxury travelers and locals looking to buy a villa for holidays, relaxation, or year-round living for retirees. Additionally, a hotel caters to tourists, especially business travelers and those staying for extended periods.

Part 3:
This area features public spaces and buildings designed for tourists. It includes restaurants, gardens, entertainment areas, a ski resort for seasonal use, and a camping area for short-term accommodations. These amenities cater to a wide range of tourist needs, allowing them to spend anywhere from a single day to multiple days. This part of the site effectively meets the diverse interests and preferences of tourists of various ages, ensuring they have enjoyable and fulfilling experiences.

Part 4:
This area includes a river and hiking paths, catering to sport enthusiasts and adventure-seekers.

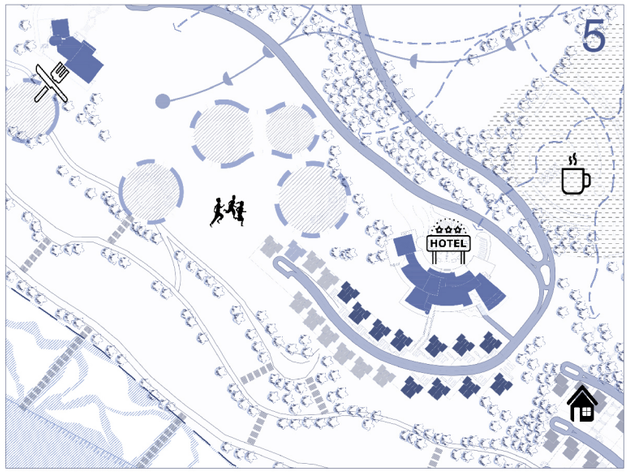


Figure 5.23 : Part 5 of designed master plan

Figure 5.24 : Part 6 of designed master plan

Hotel

Private Villa

Entertainment area

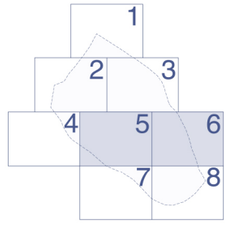
Main Road

Restaurant

Cafe

Main Road

Private Villa



Hiking Path

Private Villa

River

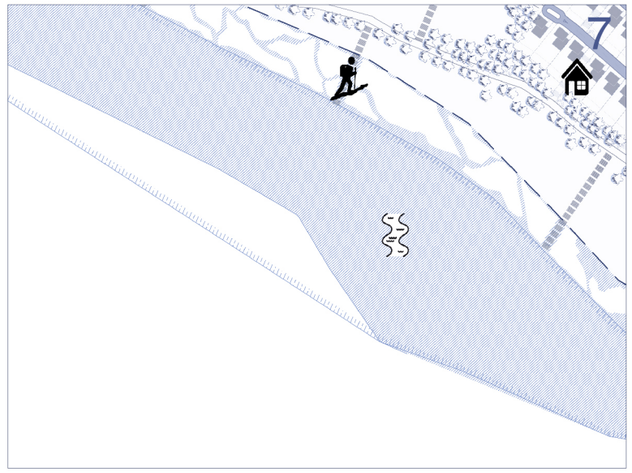


Figure 5.25 : Part 7 of designed master plan

River

Private Villa

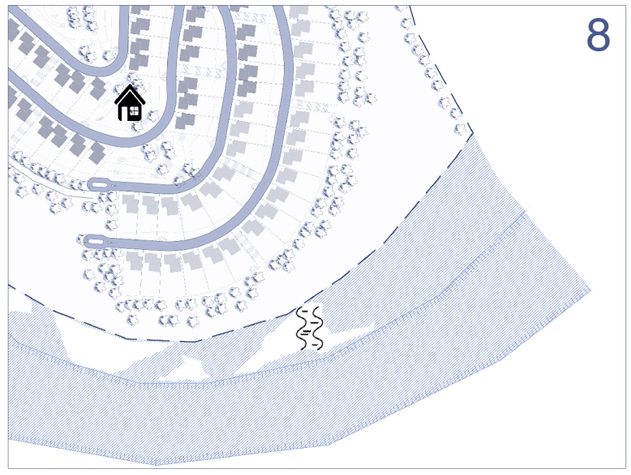
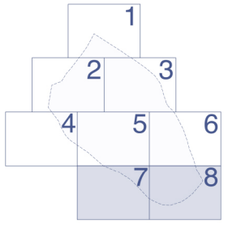


Figure 5.26 : Part 8 of designed master plan



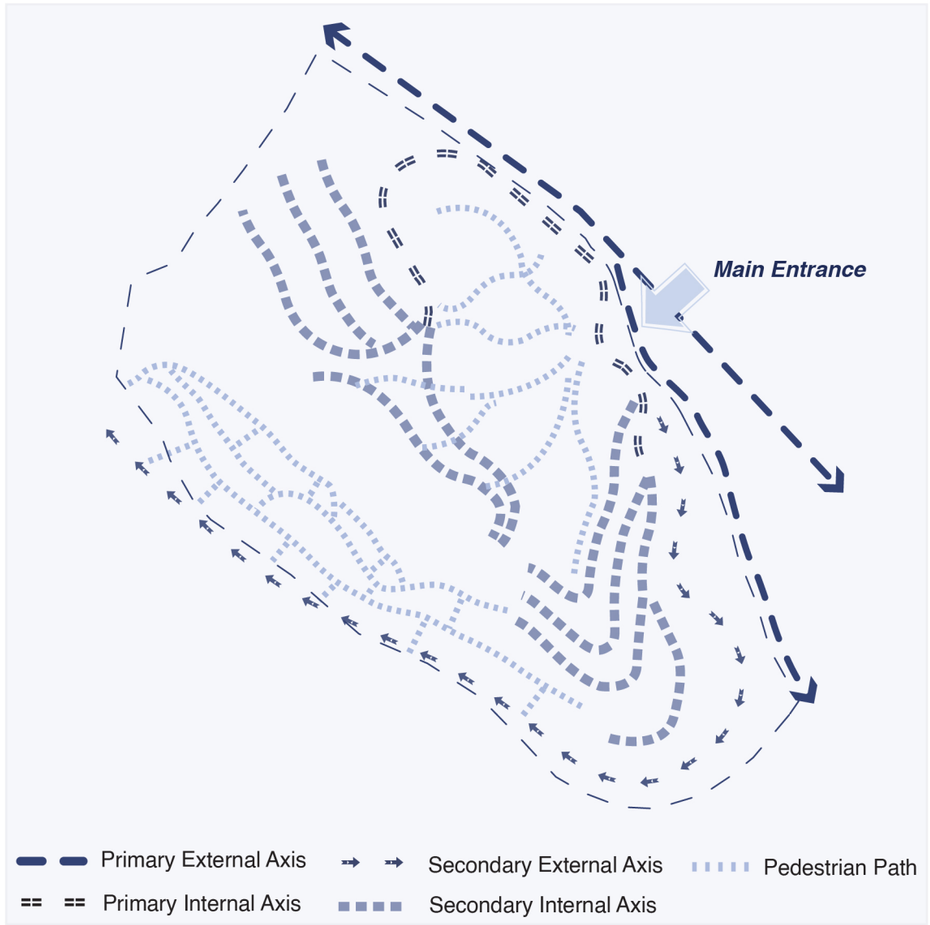
Part 5:
This area includes public functions like a hotel, restaurant, and public open spaces. Given its excellent location and views, it can be improved by adding more public facilities for various purposes and times of the year, such as seasonal sports, markets, and relaxation areas. A small part of this area also includes private villas.

Part 6:
This area consists solely of private villas oriented for long-term stays, catering to individuals with mid-range and luxury budgets.

Part 7:
This area features hiking paths and riverside spaces, catering to sport enthusiasts and nature lovers. It also includes a small section of private villas. Improvements can include adding seasonal sports and eco-tourism functions.

Part 8:
This area includes the river and a large section of private villas. Enhancements can be made by adding attractions for eco-tourists and photographers, leveraging the area's excellent views and location.

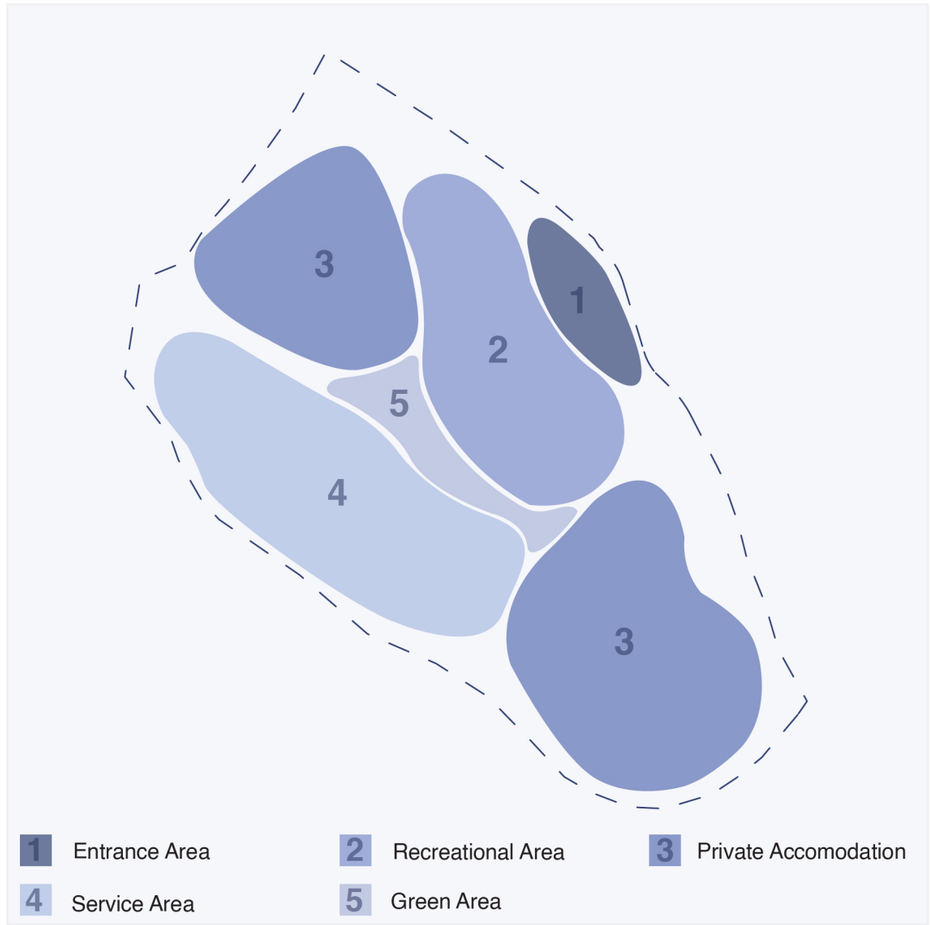
5-1.5 Mobility diagram



Mobility issues

Security Risks
Increased public access to private areas can lead to security concernsm, including unauthorized entry and potential for crime.
Accessibility Issues
Pedestrians face longer, inconvenient detours, reducing town accessibility.
High Traffic Volume
Mixing public and private routes can lead to excessive traffic on roads designed for lower volumes, causing congestion.
Limited Access to Attractions
Key attractions become difficult to reach.
Lack if bike path
Increased public access to private areas can lead to security concerns for residents or guests, including unauthorized entry and potential for crime.

5-1.6 Function diagram



Considerations on the Distributive Design Choice

The current design faces challenges with the high density of private villas, which are too close to each other, compromising privacy and exacerbating accessibility issues.To optimize it ,the distributive design choices must be carefully revised. Enhancing functionality and security involves clearly delineating public and private areas to prevent unauthorized access and implementing effective traffic management strategies. Increasing spacing between private villas will improve privacy and comfort, while integrating well-designed pedestrian routes and bike paths will enhance accessibility and reduce congestion. By optimizing the placement of key attractions and ensuring efficient connectivity, the design will not only resolve privacy and accessibility concerns but also create a more functional, secure, and enjoyable environment for both residents and visitors.

5-1.7 Design Issues , Resident / Visitor Concerns

The villas are too close together, so we don't have any privacy. Why did they build so many here? It would be great to have more space to enjoy the nature more .

I wish there were more private open spaces for those of us who bought a villa in this town. Everywhere is crowded with tourists, leaving us without safety and privacy.

The pedestrian paths are insufficient, making it difficult to walk and reach other parts of town.How can I go to the restaurant ?

Our villas are in a prime location with stunning views, but the hotel built nearby has blocked the scenery. Why were they placed so close together?

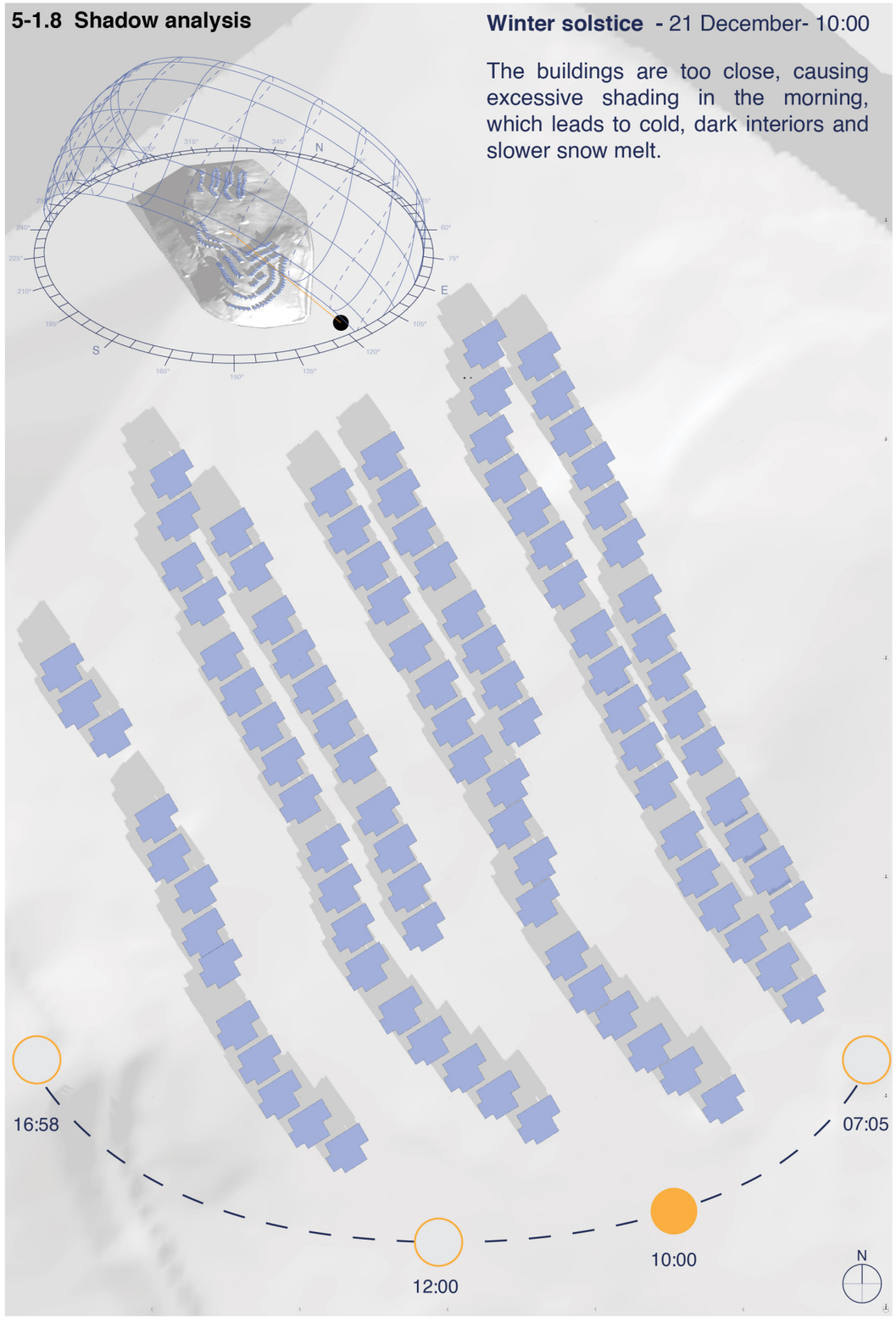
It is not safe to travel to this tourist town by bicycle, as there are no bicycle paths. Additionally, there is no access to public transportation. So, how can I reach the hotel?

The view from the hotel was stunning, but it was difficult to reach on foot. Additionally, it is quite far from other entertainment options and public areas of the tourist town.

5-1.8 Shadow analysis

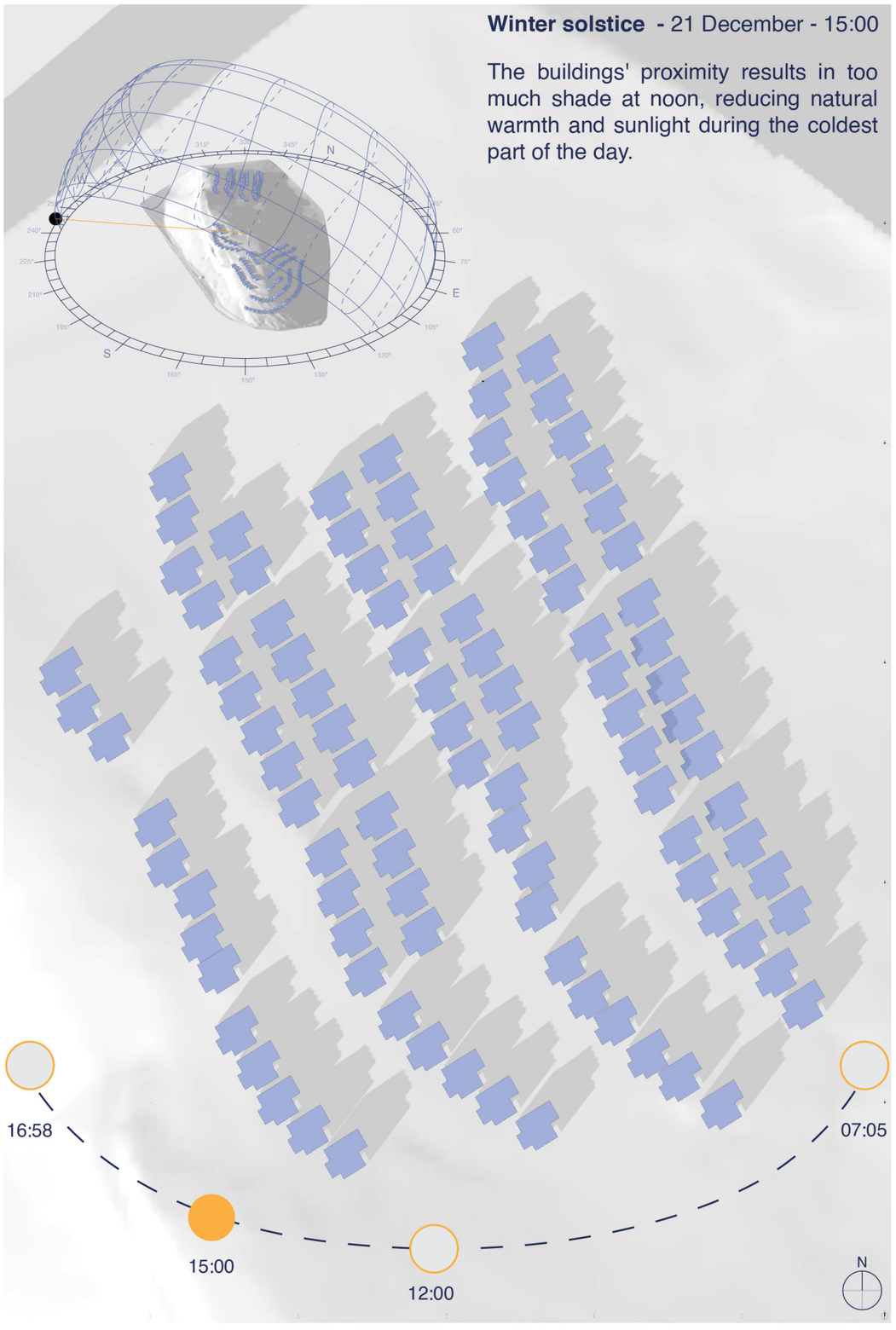
Winter solstice - 21 December- 10:00

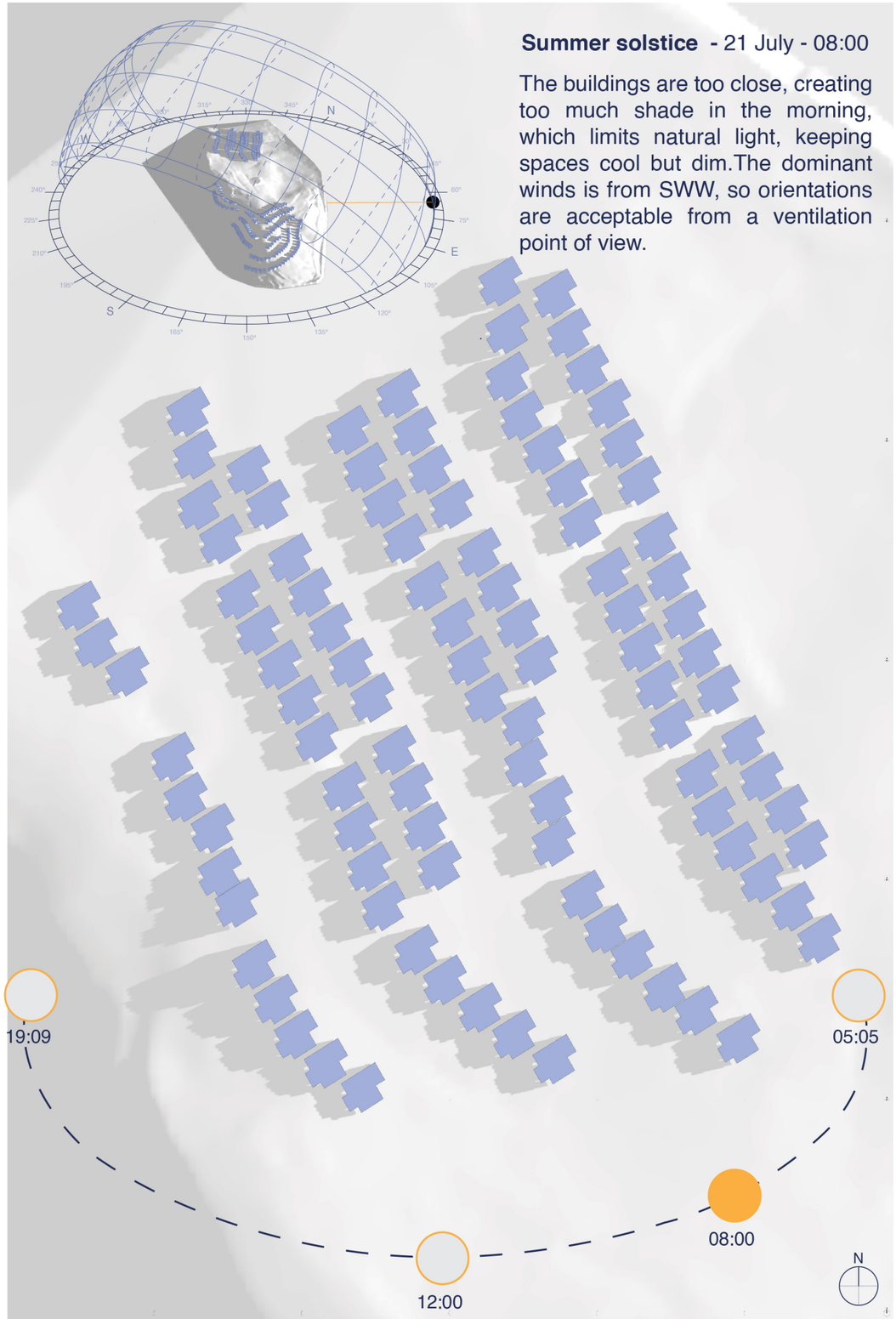
The buildings are too close, causing excessive shading in the morning, which leads to cold, dark interiors and slower snow melt.



Winter solstice - 21 December - 15:00

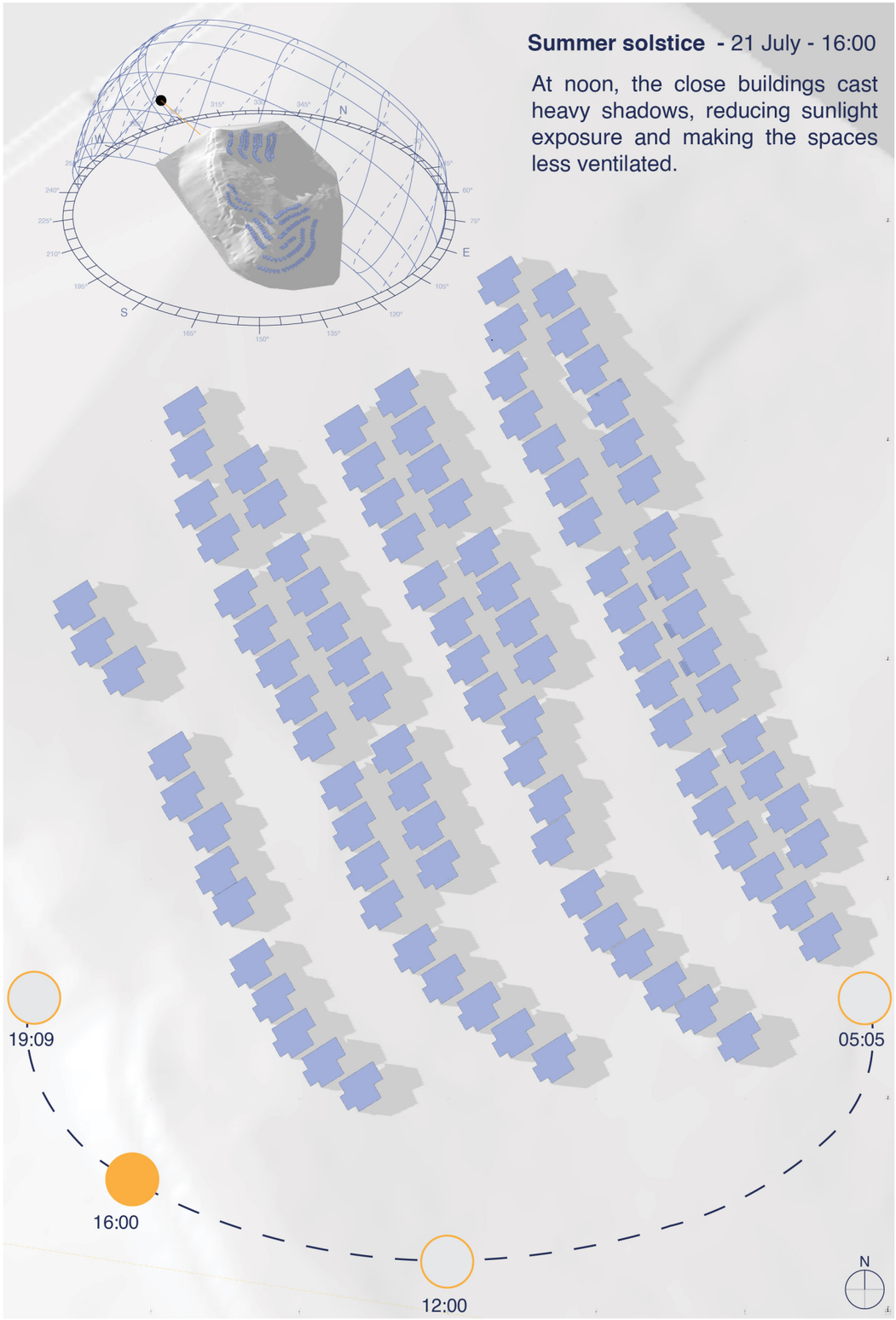
The buildings' proximity results in too much shade at noon, reducing natural warmth and sunlight during the coldest part of the day.





Summer solstice - 21 July - 08:00

The buildings are too close, creating too much shade in the morning, which limits natural light, keeping spaces cool but dim.The dominant winds is from SWW, so orientations are acceptable from a ventilation point of view.



Summer solstice - 21 July - 16:00

At noon, the close buildings cast heavy shadows, reducing sunlight exposure and making the spaces less ventilated.

05 / 2

The Project
Bioclimatic Design Approach

5-2.1 Bioclimatic analysis

For the project, we are using ClimateConsultant[1] to conduct a thorough bioclimatic analysis, which will guide the design of both buildings and outdoor spaces. This software provides key tools like the Wind Wheel, Sun Shading Chart, and Psychrometric Chart with specific design strategies tailored to the local climate.

- Wind Wheel: We use this to understand prevailing wind directions and speeds, allowing me to optimize natural ventilation for indoor comfort and strategically place wind breaks or channels in outdoor areas.

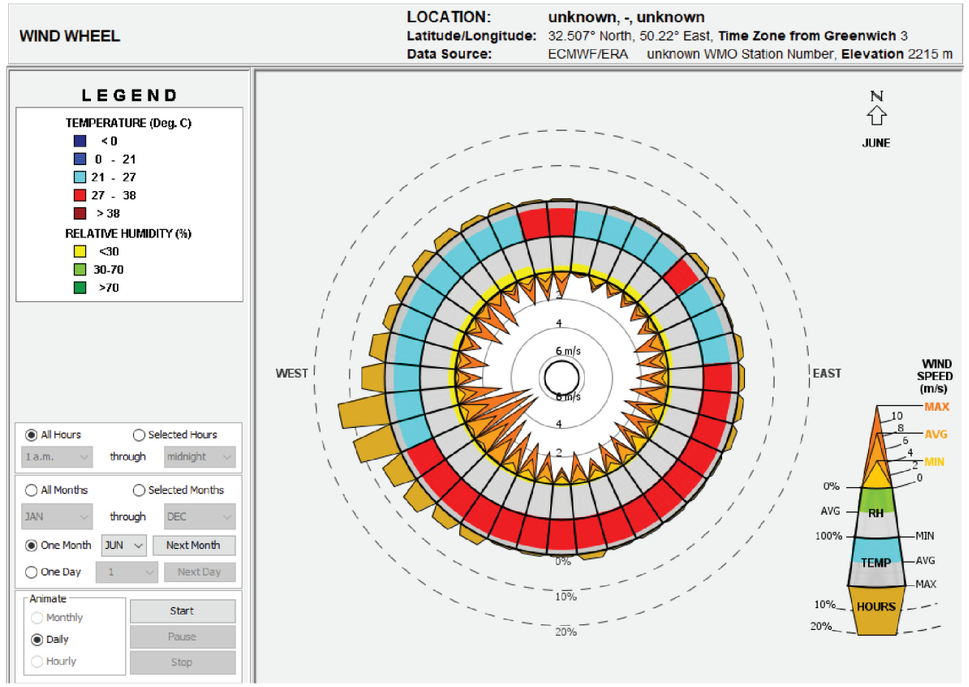
- Sun Shading Chart: This will help us design shading devices and position buildings to maximize solar gain in winter and minimize it in summer, ensuring year-round thermal comfort.

- Psychrometric Chart with Design Strategies: This chart will provide insights into the most effective passive design strategies—such as natural ventilation, evaporative cooling, or solar heating—based on the local climate conditions.

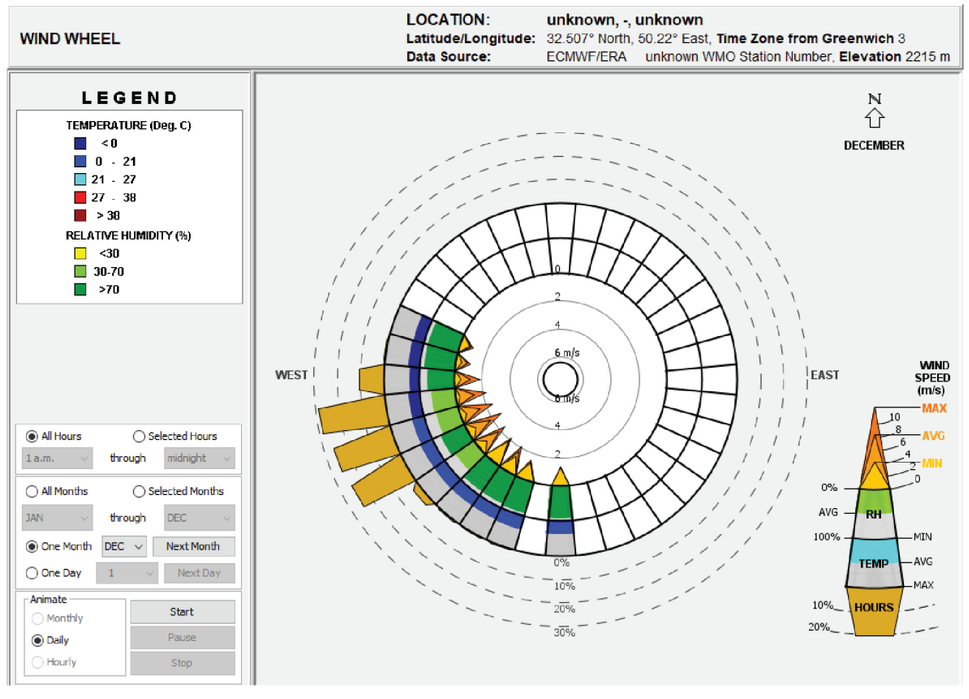
By integrating these tools, we can create a design that naturally adapts to the environment, enhancing comfort, reducing energy consumption, and ensuring that both the buildings and outdoor spaces are in harmony with the local climate.

1. Climate Consultant is a software tool used by architects and designers to analyze local climate data and develop climate-responsive design strategies

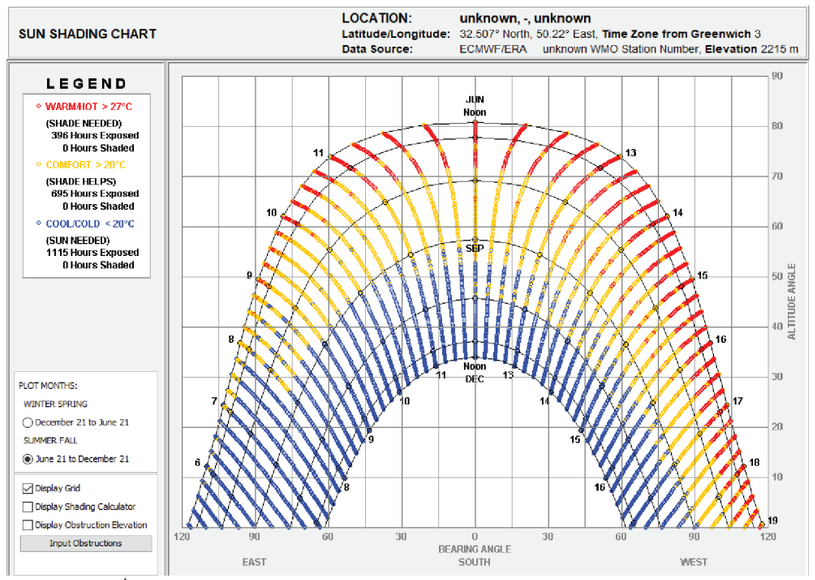
Climate consultant 6.0



Summer Wind - June

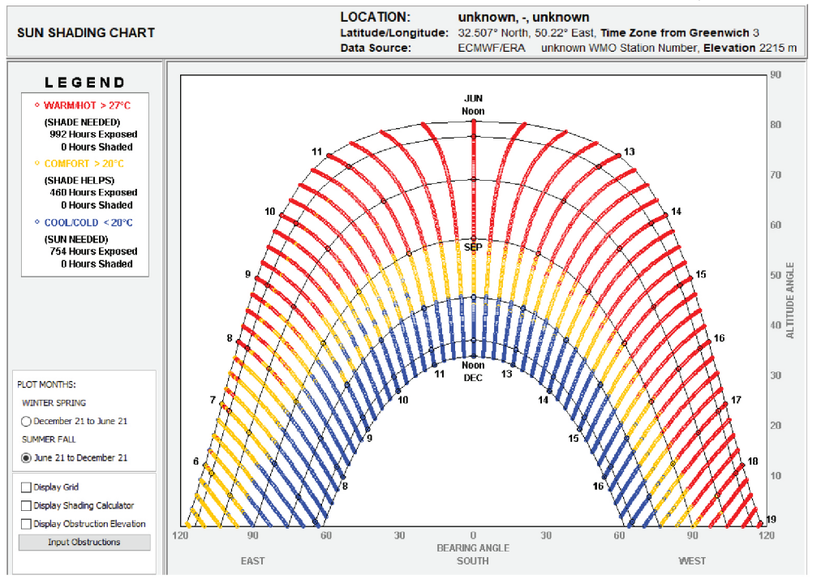


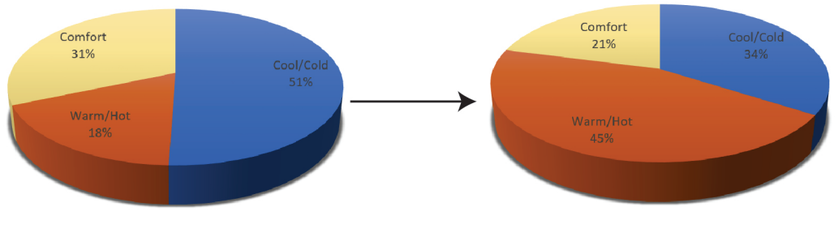
Winter Wind - December



2020

2080

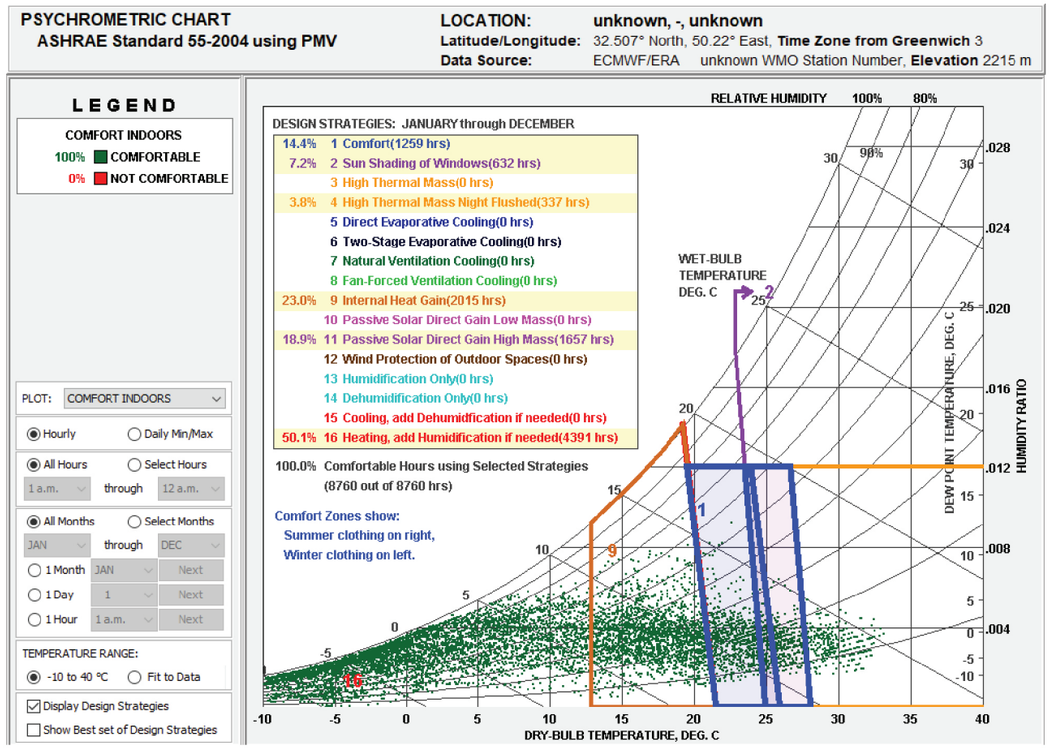




2020 2080

Figure 5.27 : Changes in Sun Exposure

2020 - Strategies applied



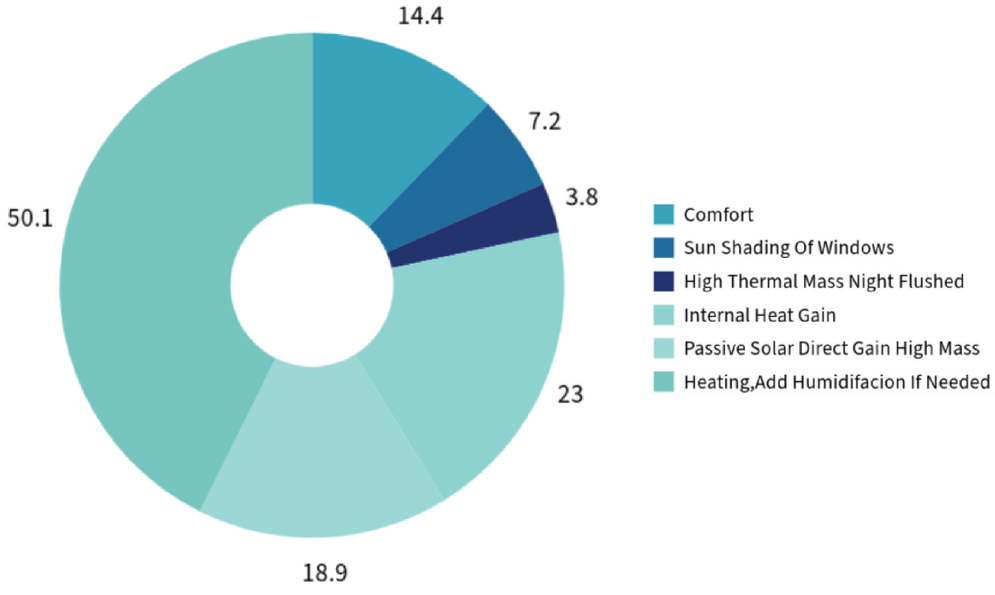
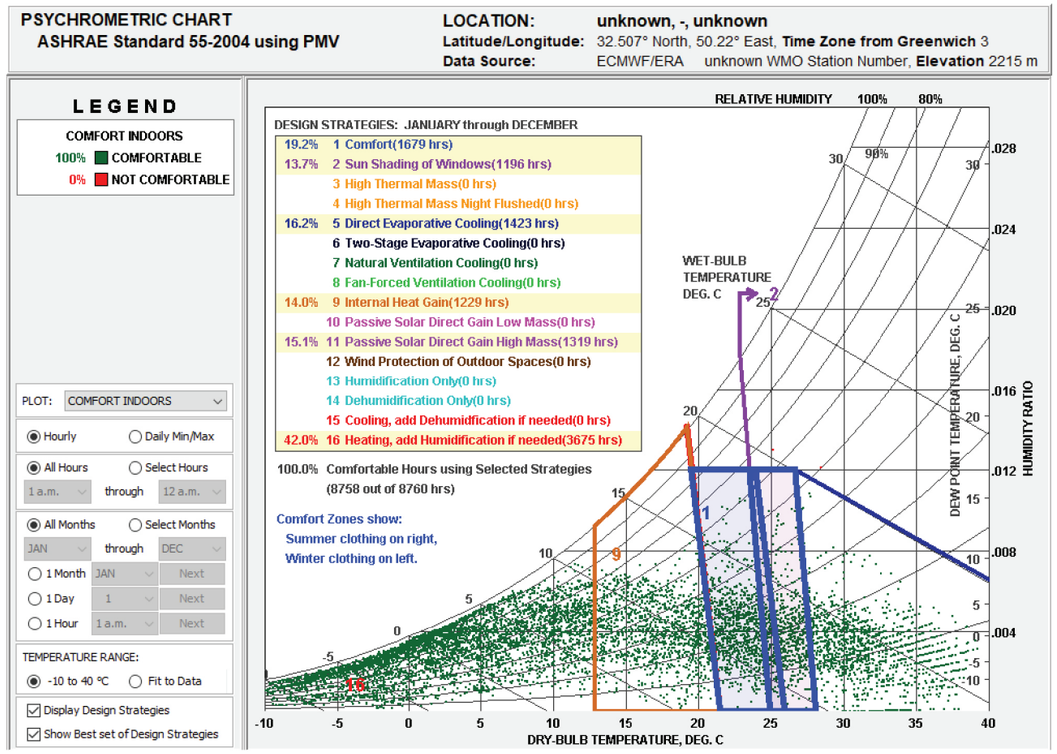


Figure 5.28 : 2020 Comfort Strategies

2080 - Strategies applied



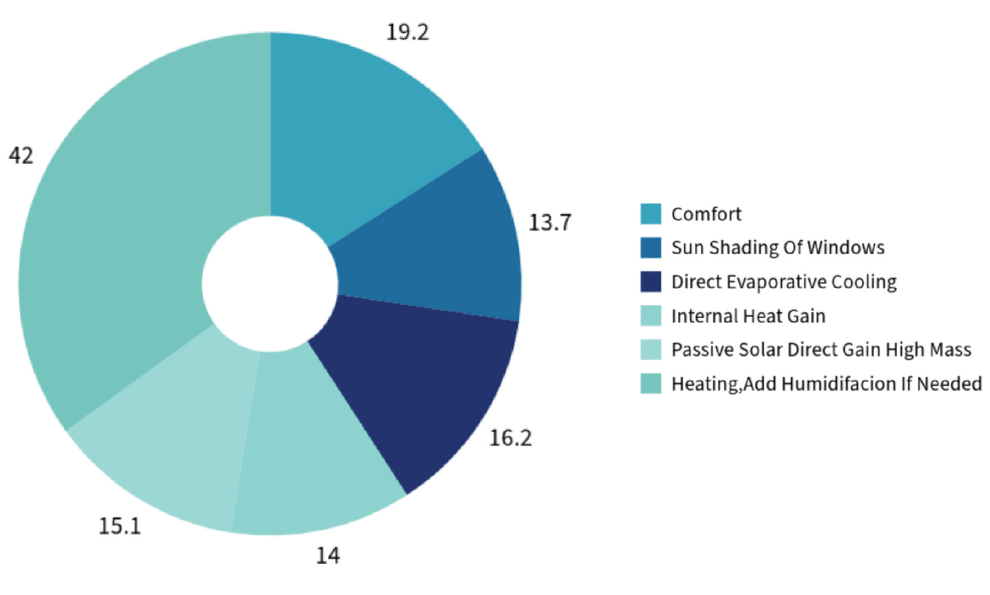


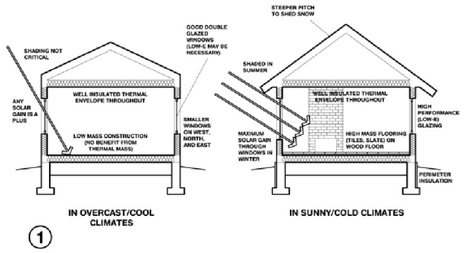
Figure 5.29 : 2080 Comfort Strategies

5-2.2 Design guildines / Strategies

Assuming only the Design Strategies that were selected on the Psychrometric Chart, 100.0% of the hours will be Comfortable. This list of Residential Design guidelines applies specifically to this particular climate, starting with the most important first. Click on a Guideline to see a sketch of how this Design Guideline shapes building design (see Help).

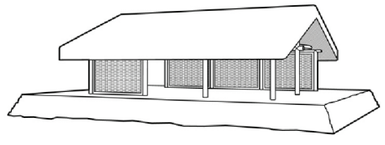
19	For passive solar heating face most of the glass area south to maximize winter sun exposure, but design overhangs to fully shade in summer
20	Provide double pane high performance glazing (Low-E) on west, north, and east, but clear on south for maximum passive solar gain
3	Lower the indoor comfort temperature at night to reduce heating energy consumption (lower thermostat heating setback) (see comfort low criteria)
31	Organize floorplan so winter sun penetrates into daytime use spaces with specific functions that coincide with solar orientation
11	Heat gain from lights, people, and equipment greatly reduces heating needs so keep home tight, well insulated (to lower Balance Point temperature)
18	Keep the building small (right-sized) because excessive floor area wastes heating and cooling energy
15	High Efficiency furnace (at least Energy Star) should prove cost effective
14	Locate garages or storage areas on the side of the building facing the coldest wind to help insulate
35	Good natural ventilation can reduce or eliminate air conditioning in warm weather, if windows are well shaded and oriented to prevailing breezes
2	If a basement is used it must be at least 18 inches below frost line and insulated on the exterior (foam) or on the interior (fiberglass in furred wall)
8	Sunny wind-protected outdoor spaces can extend living areas in cool weather (seasonal sun rooms, enclosed patios, courtyards, or verandahs)
1	Tiles or slate (even on wood floors) or a stone-faced fireplace provides enough surface mass to store winter daytime solar gain and summer nighttime 'coolth'
16	Trees (neither conifer or deciduous) should not be planted in front of passive solar windows, but are OK beyond 45 degrees from each corner
50	An Evaporative Cooler can provide enough cooling capacity (if water is available and humidity is low) thus reducing or even eliminating air conditioning)
37	Window overhangs (designed for this latitude) or operable sunshades (awnings that extend in summer) can reduce or eliminate air conditioning
4	Extra insulation (super insulation) might prove cost effective, and will increase occupant comfort by keeping indoor temperatures more uniform
12	Insulating blinds, heavy draperies, or operable window shutters will help reduce winter night time heat losses
62	Traditional passive homes in temperate climates used light weight construction with slab on grade and operable walls and shaded outdoor spaces
13	Steep pitched roof, with a vented attic over a well insulated ceiling, works well in cold climates (sheds rain and snow, and helps prevent ice dams)
61	Traditional passive homes in hot dry climates used high mass construction with small recessed shaded openings, operable for night ventilation to cool the mass

Design Strategies



1

Tiles or slate (even on wood floors) or a stone-faced fireplace provides enough surface mass to store winter daytime solar gain and summer nighttime 'coolth'



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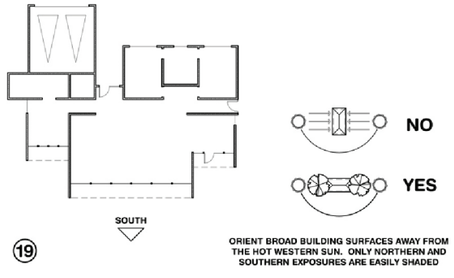
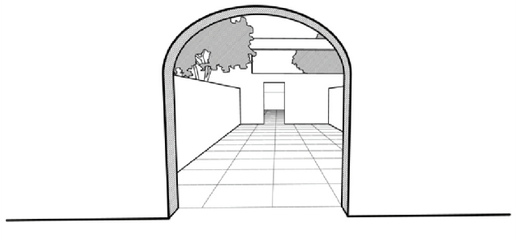
Traditional passive homes in temperate climates used light weight construction with slab on grade and operable walls and shaded outdoor spaces



19

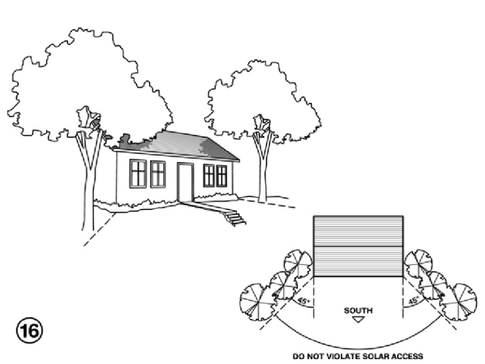
For passive solar heating face most of the glass area south to maximize winter sun exposure, but design overhangs to fully shade in summer



8

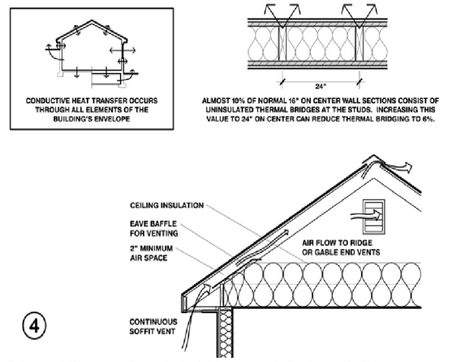
Sunny wind-protected outdoor spaces can extend living areas in cool weather (seasonal sun rooms, enclosed patios, courtyards, or verandahs)

Design Strategies



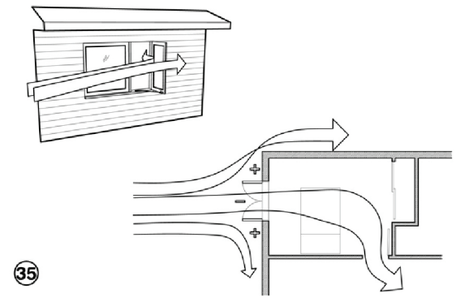
16

Trees (neither conifer or deciduous) should not be planted in front of passive solar windows, but are OK beyond 45 degrees from each corner



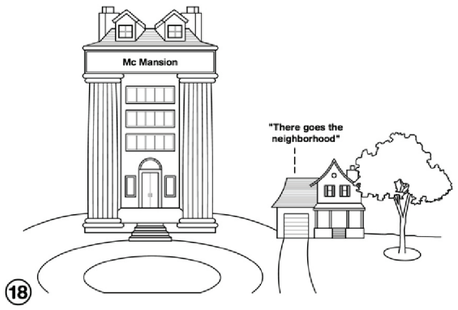
4

Extra insulation (super insulation) might prove cost effective, and will increase occupant comfort by keeping indoor temperatures more uniform



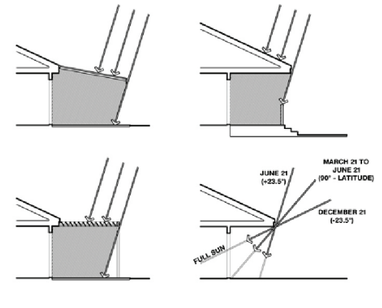
35

Good natural ventilation can reduce or eliminate air conditioning in warm weather, if windows are well shaded and oriented to prevailing breezes



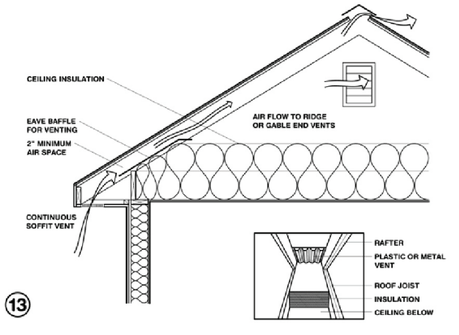
18

Keep the building small (right-sized) because excessive floor area wastes heating and cooling energy



37

Window overhangs (designed for this latitude) or operable sunshades (awnings that extend in summer) can reduce or eliminate air conditioning



13

Steep pitched roof, with a vented attic over a well insulated ceiling, works well in cold climates (sheds rain and snow, and helps prevent ice dams)

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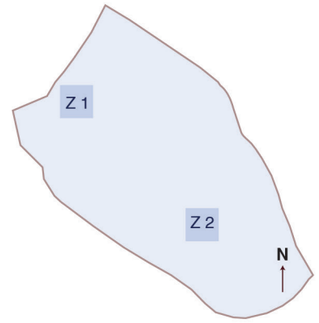
The Project
Microclimatic analysis

5-3.1 Microclimate Analysis Approach

We intend to conduct a microclimate [1] analysis for my project utilizing Rhino and Grasshopper, with a specialized script to produce heatmaps for various months, assess incident solar radiation, and calculate Cooling Degree Days (CDD) and Heating Degree Days (HDD).

We selected two distinct areas of the site, each with different orientations and characteristics, including both outdoor spaces and sections containing villas. This approach allows us to better understand which areas require specific design strategies to enhance comfort and efficiency.



The analysis outcomes

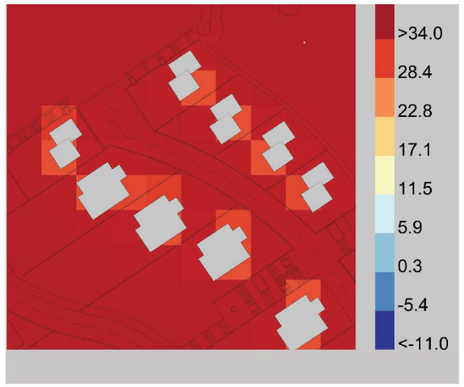
Through this analysis, we can identify the most and least energy-efficient areas, optimize building orientation, and improve thermal comfort for occupants across different seasons.

Building on the bioclimatic [2] analysis, we can better integrate design strategies for indoor and outdoor spaces by understanding the local microclimate and seasonal variations. This allows us to enhance thermal comfort by optimizing natural ventilation, shading, and solar exposure, leading to more comfortable and energy-efficient environments year-round.

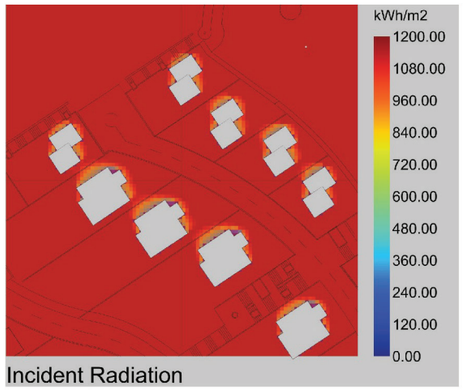
1. A microclimate is the specific climate of a small area that differs from the surrounding region due to local factors like terrain and vegetation.

2. Bioclimatic design tailors buildings to local climate conditions, optimizing comfort and energy efficiency through natural environmental strategies.

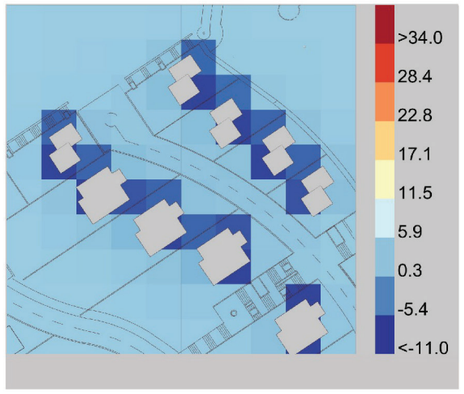
Zone 1



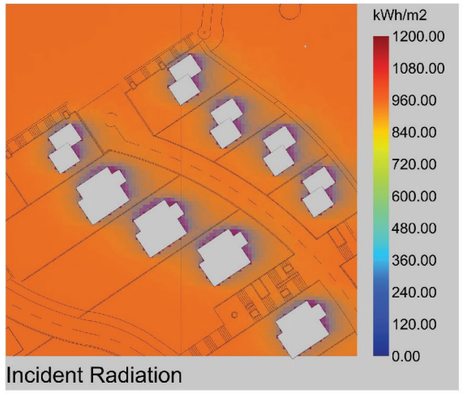
Heatmap - 21 July



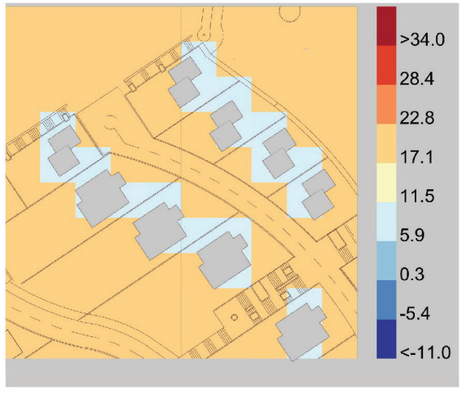
From January to December
1676.8 kWh/m2



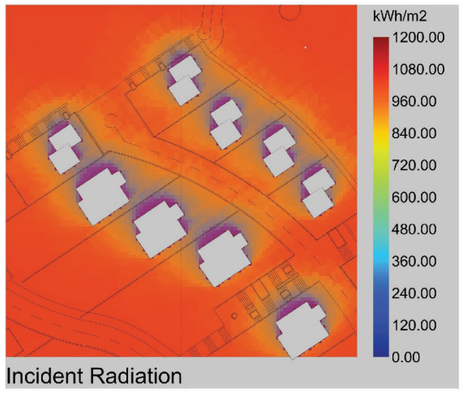
Heatmap - 21 January



Incident Radiation during Cooling Degree Hours (CDH)
692.06 kWh/m2



Heatmap - 21 December



Incident Radiation during Heating Degree Hours (HDH)
752.9 kWh/m2

Winter Shadow

21 December - Morning - 10 AM

21 December - Noon - 12 PM

21 December - Evening - 15 PM

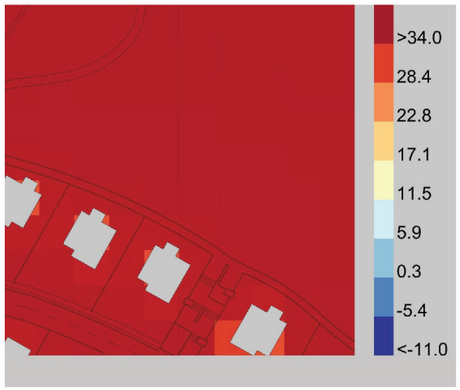
Summer Shadow

21 July - Morning - 08 AM

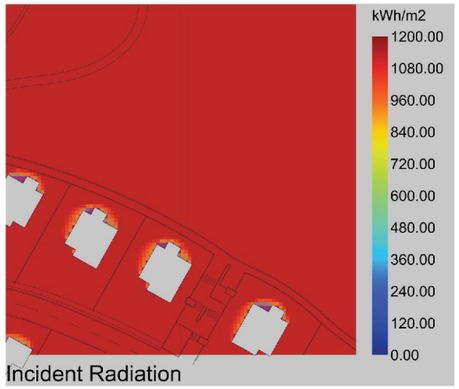
21 July - Noon - 12 PM

21 July - Evening - 16 PM

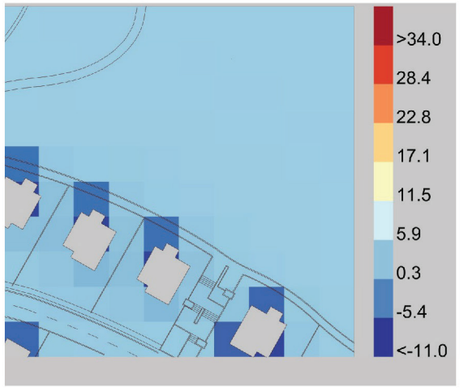
Zone 2



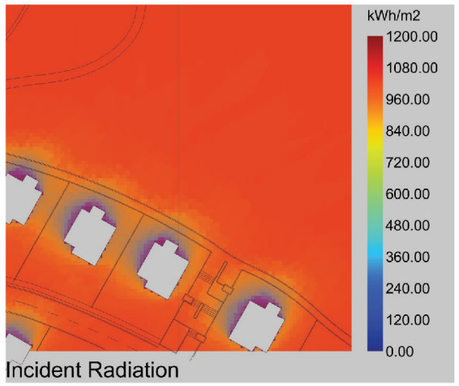
Heatmap - 21 July



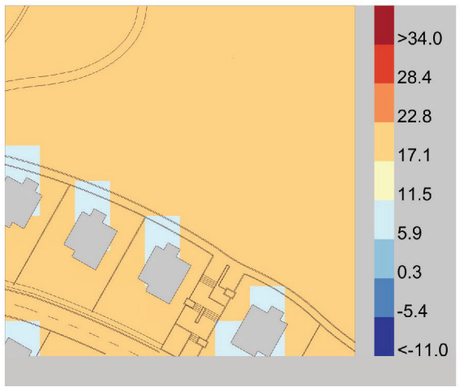
From January to December
1880.4 kWh/m2



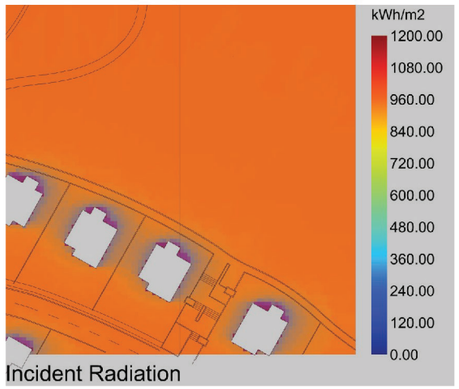
Heatmap - 21 January



Incident Radiation during Heating Degree Hours (HDH)
859.1 kWh/m2



Heatmap - 21 December



Incident Radiation during Cooling Degree Hours (CDH)
761.4 kWh/m2

Winter Shadow

21 December - Morning - 10 AM

21 December - Noon - 12 PM

21 December - Evening - 15 PM

Summer Shadow

21 July - Morning - 08 AM

21 July - Noon - 12 PM

21 July - Evening - 16 PM

5-3.2 Climatic Design Approach (Outdoor)

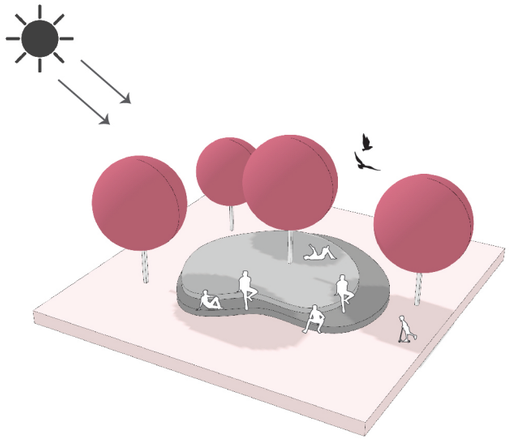


Figure 5.30 : **Natural shading**
Vegetation to filter direct sunlight

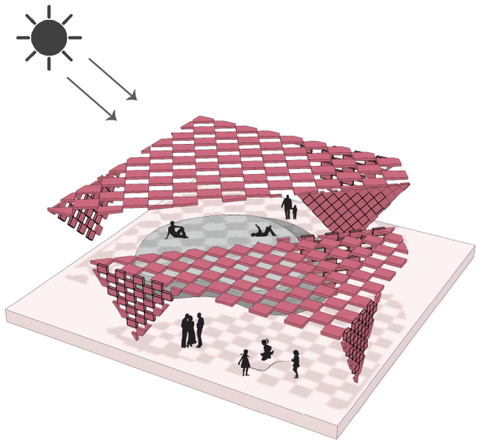


Figure 5.31 : **Artificial shading**
Canopies with solar pannels

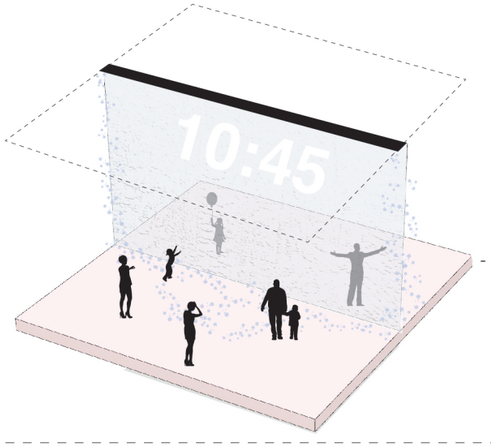
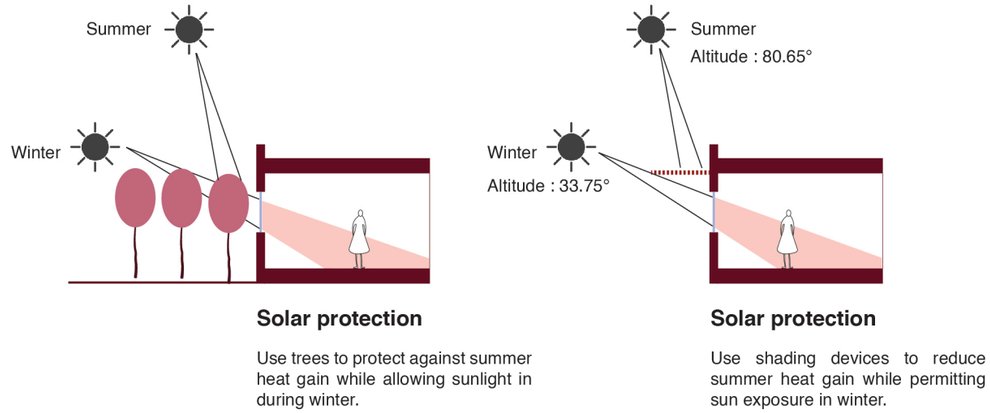


Figure 5.32 : **Water parks**
Summer Cooling & interactive functions

5-3.3 Climatic Design Approach (Indoor)



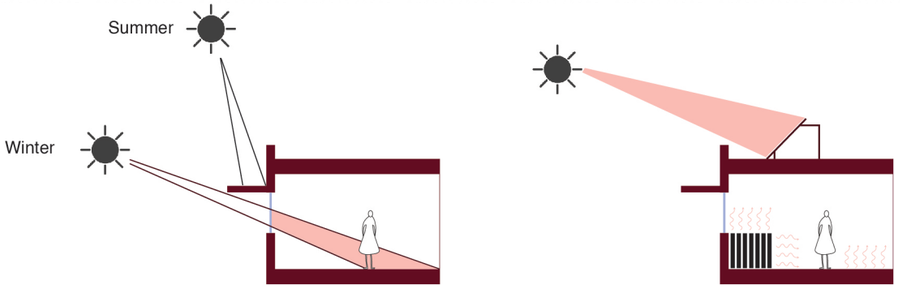
Solar protection

Use trees to protect against summer heat gain while allowing sunlight in during winter.

Solar protection

Use shading devices to reduce summer heat gain while permitting sun exposure in winter.

Figure 5.32 : Sun protection



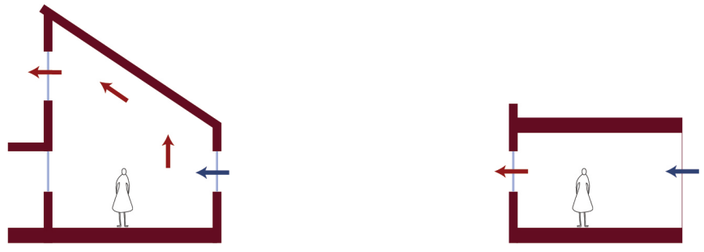
Passive solar heating

Utilizes sunlight to naturally warm indoor spaces by capturing and storing solar energy.

Active heating

Use solar panels to convert sunlight into electricity or heat, providing energy for warming indoor spaces

Figure 5.33 : Heating



Natural ventilation

Pitched roofs enable natural ventilation by letting warm air escape and cool air enter through vents.

Cross-ventilation

In cross-ventilation,air flows through the space, enhancing indoor air quality and cooling.

Figure 5.34: Ventilation

05 / 4

The Project
Proposal Masterplan

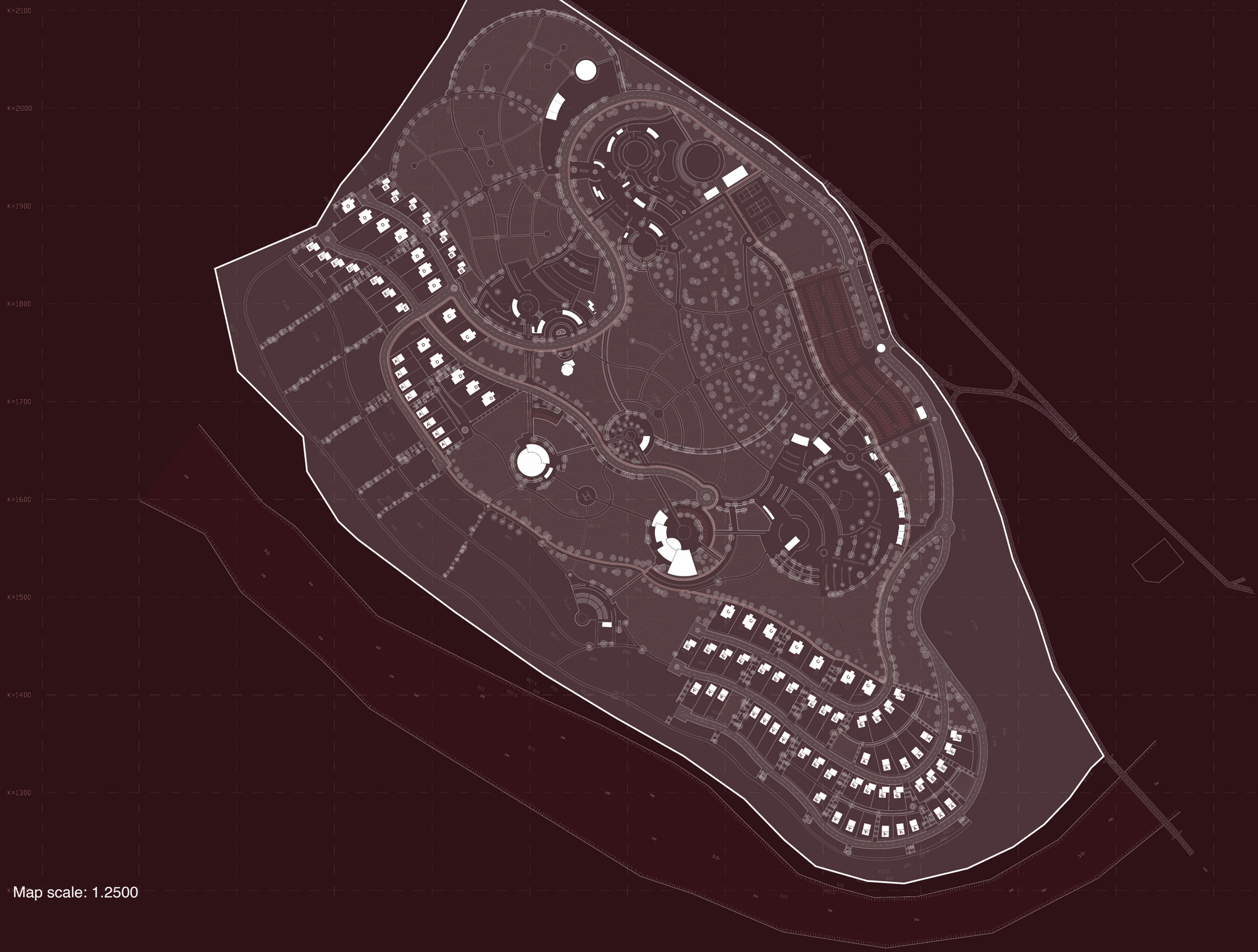
5-4.1 The Masterplan (Kohrang's Resort Village)

The master plan design represents a significant evolution from the previous layout, focusing on enhancing public spaces and introducing several multifunctional areas. Key improvements include a clear zoning strategy that differentiates private, public, semi-private, and semi-public spaces, ensuring that each area serves its intended purpose effectively. The addition of urban farms and local shops fosters a vibrant community atmosphere, promoting local produce and goods while enhancing the overall experience for both residents and visitors.

Unlike the previous design, which primarily targeted tourism, the new master plan reimagines the site as a place for living while still accommodating tourists, creating a balanced environment that meets the needs of both groups. Enhanced accessibility throughout the site ensures that all areas are easily navigable, with dedicated bike paths and walking and hiking trails integrated throughout the entire area. This encourages outdoor activities and promotes a healthy, active lifestyle

Furthermore, the spacing between the villas has been increased, allowing for greater privacy and a more harmonious integration with the surrounding landscape. The villa designs have also been updated in response to microclimatic and bioclimatic analyses, ensuring that they are not only aesthetically pleasing but also energy-efficient and sustainable. These changes collectively contribute to a more functional and inviting environment that prioritizes both community living and tourism, ultimately enhancing the quality of life for residents while attracting visitors.

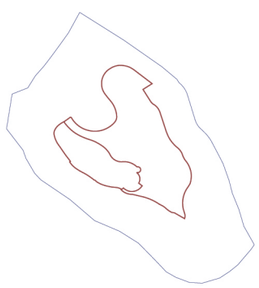
5-4.2 The Design



Map scale: 1.2500

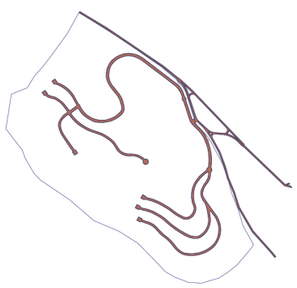
5-4.3 Mobility Diagram

Primary External Axis
Primary Internal Axis
Secondary External Axis
Secondary Internal Axis
Pedestrian Path
Bike Path



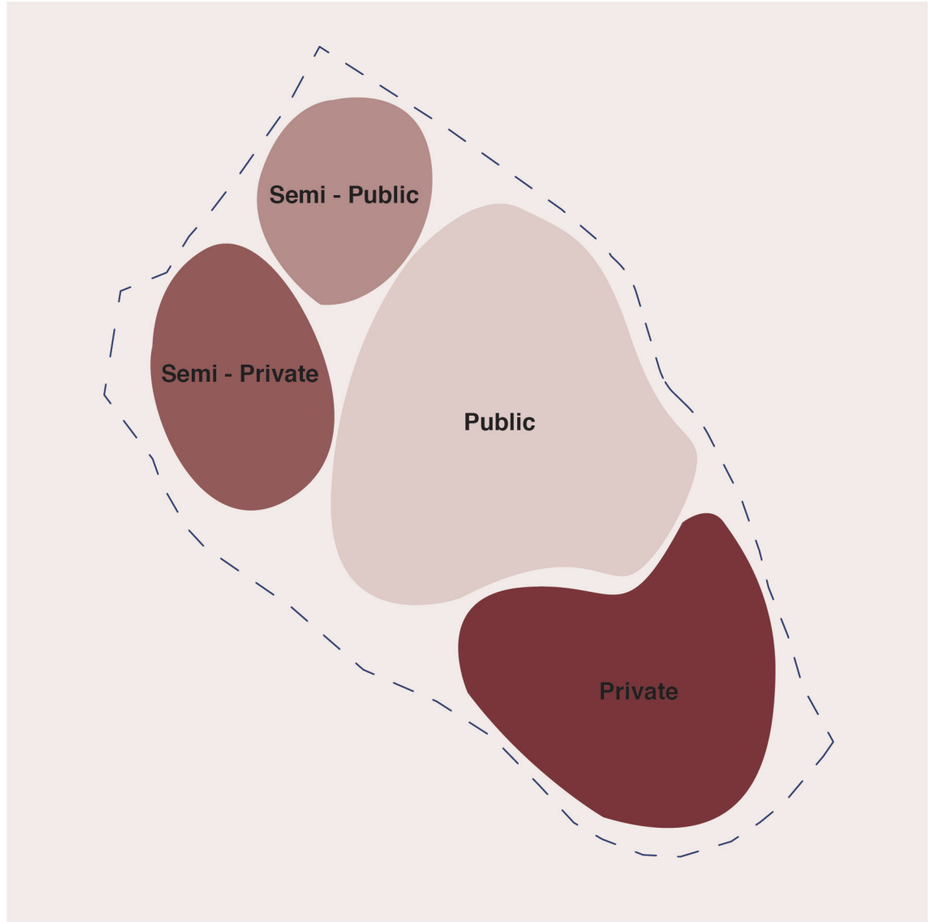
Bike path

Pedestrian

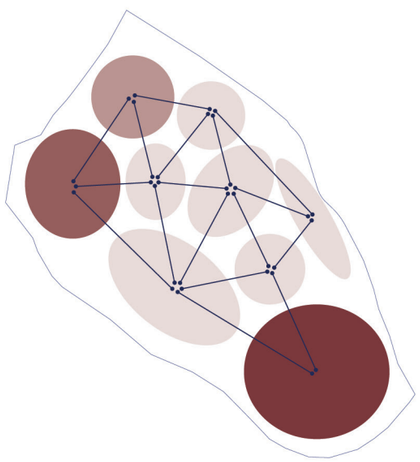


Road

5-4.4 Function Diagram



Private
Semi - Private
Semi - Public
Public



5-4.5 Private and non-private (rental) Villas

Accessibility and Privacy level

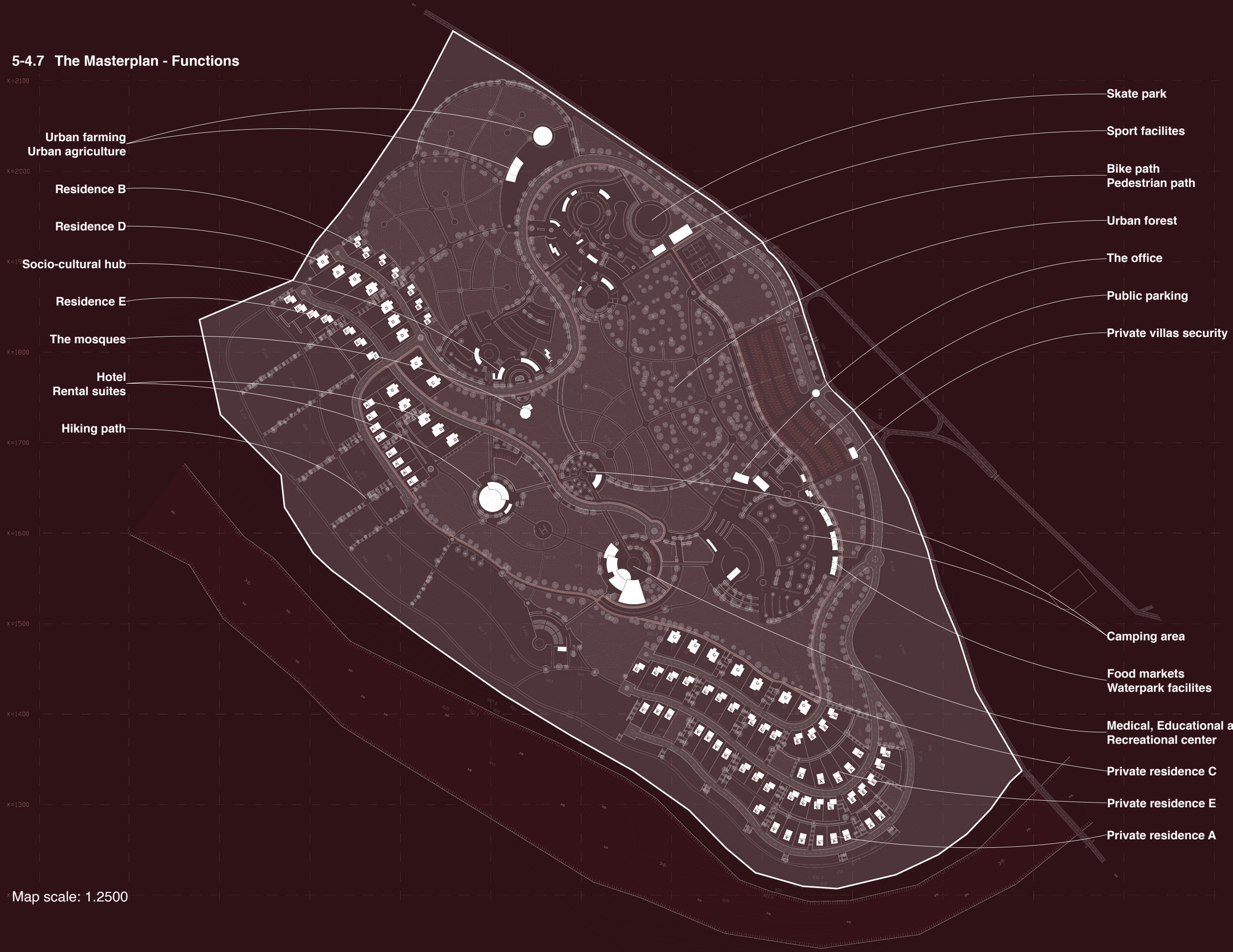
The buildings in this master plan are divided into four categories, each with varying levels of accessibility and privacy. Public buildings, like cultural centers and recreational facilities, are open to all visitors. Semi-public buildings, including conference rooms, dining areas, and urban farms, have restricted access and specific operating hours. Semi-private buildings are intended for more exclusive use, such as guest houses with limited access. Private villas offer the highest level of privacy, reserved for owners or long-term residents.
The plan ensures controlled access to each area, allowing convenient movement while maintaining privacy in semi-private and private zones.

5-4.6 Common Green Areas

Greenery for All

The public green areas in this master plan are designed as open spaces accessible to everyone, providing a welcoming environment for a variety of outdoor activities. These areas are thoughtfully integrated to support camping, picnics, and community gatherings, offering spaces where visitors can connect with nature and enjoy recreational activities in a peaceful setting. The design encourages inclusivity, ensuring that these green spaces are easily accessible and inviting for all, fostering a sense of community and offering a retreat from urban life.

5-4.7 The Masterplan - Functions



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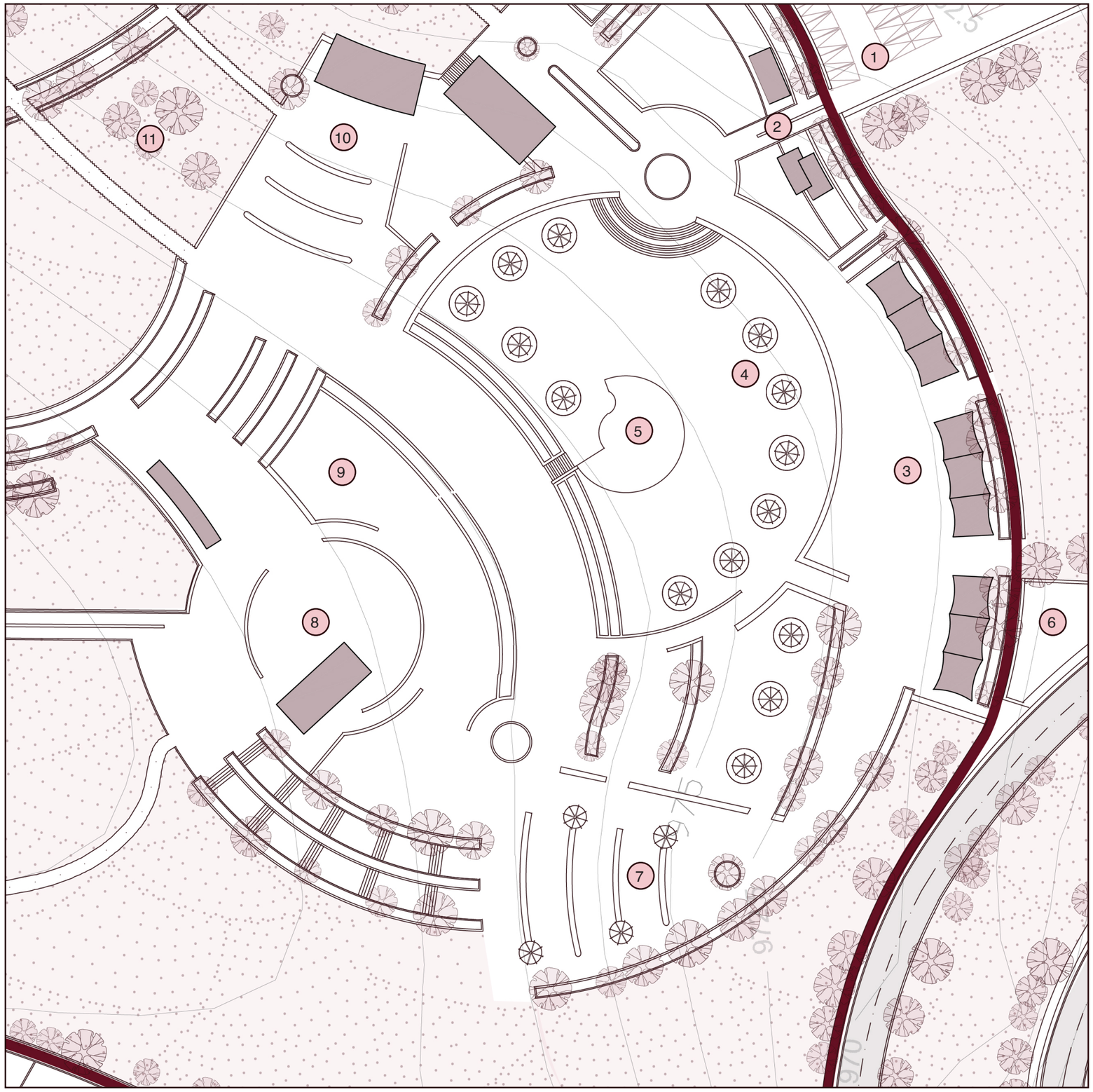


5-4.8 Zoom-In: Area 1

The area is a vibrant public space designed to cater to both locals and tourists, combining leisure, nature, and convenience. At the entrance, a large parking area ensures easy access, adjacent to a serene forest offering tranquil spots for relaxation and various camping zones equipped with gazebos and open spaces for tents.
A bike path encircles the entire site, with designated areas for renting bikes and scooters, encouraging eco-friendly exploration. Multiple cafes, restaurants, and food truck stations serve a variety of local and fast foods, enhancing the culinary experience. A daily market near the camping sites provides essentials and unique local goods, while a nearby water park adds a refreshing recreational option, particularly popular during the summer, creating a dynamic and welcoming environment for all visitors.

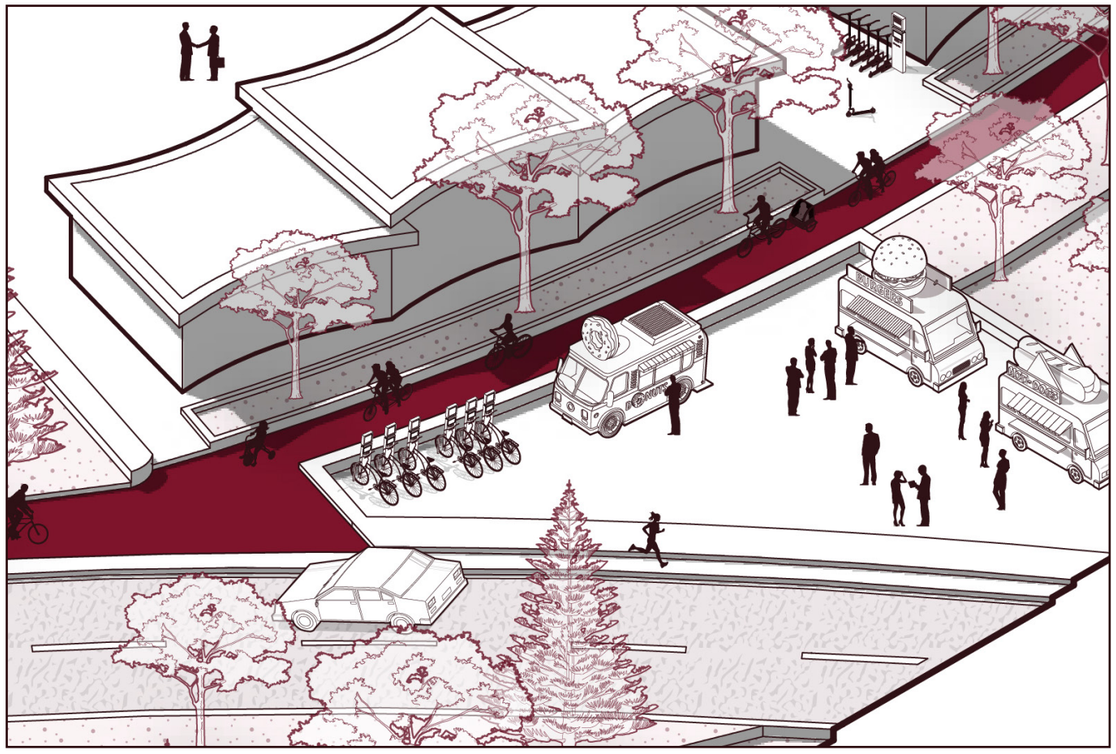
Functions:

1. Parking Area
2. Bicycle Renting Spaces
3. Local and Daily Markets
4. Gazebo Area
5. Water Park
6. Food Trucks
7. Recreational spaces
8. Resturant
9. Fast Food Area
10. Offices
11. Camping Forest

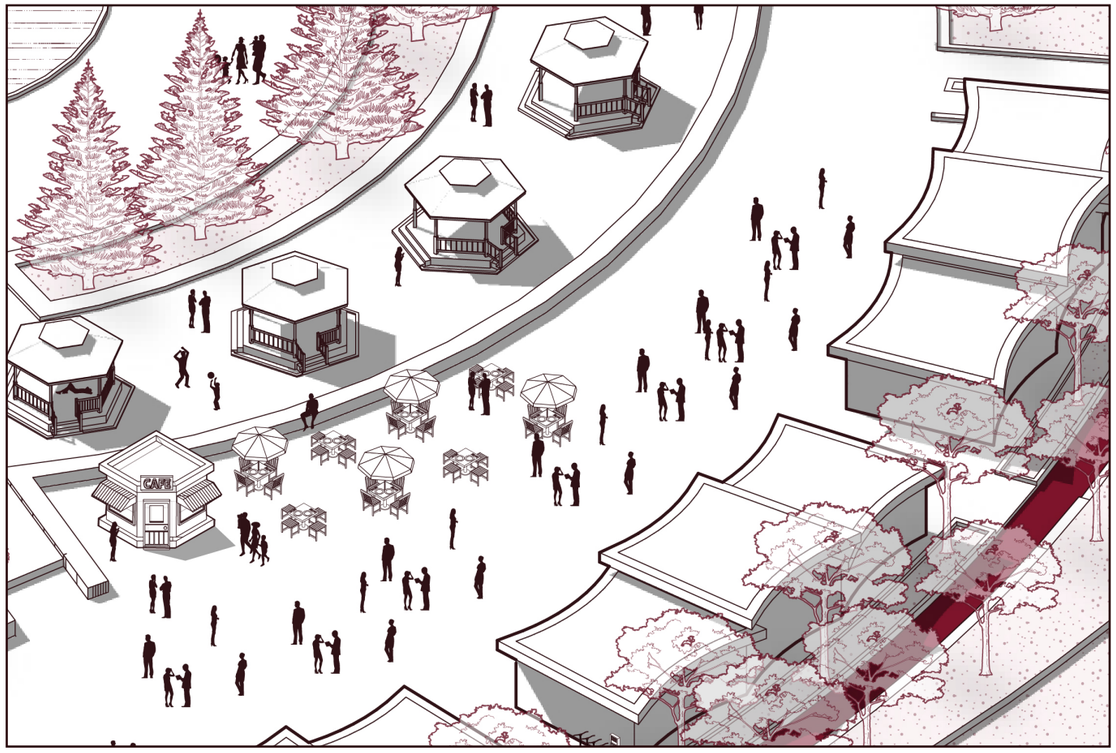
Zoom-in Area 1 - Public

- Diverse food options cater to a variety of tastes and preferences.
- Daily market provides essentials and unique local goods for campers.
- Water park adds family-friendly recreation, especially popular in summer.
- Well-balanced design combining nature, leisure, and modern amenities.

- Convenient parking ensures easy access for visitors.
- Forest and camping zones offer peaceful relaxation and outdoor activities.
- Bike path promotes eco-friendly exploration with rental options.
- Inviting atmosphere encourages community engagement and social interaction.

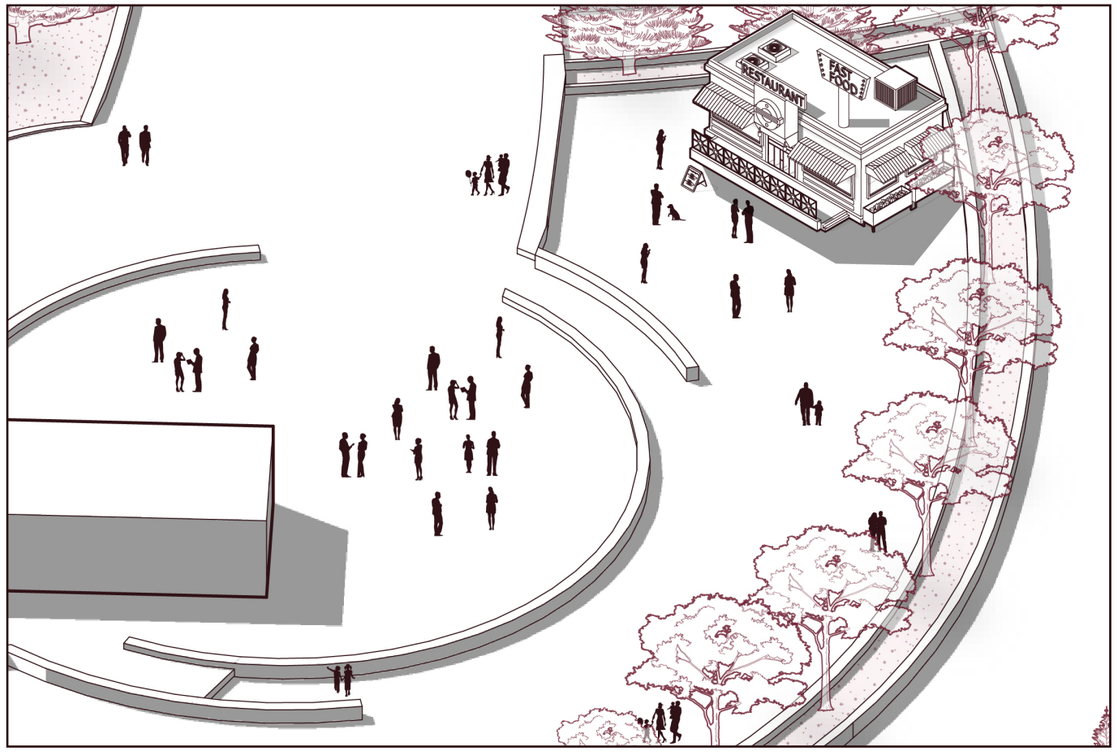


Food Trucks and Local Foods, Bike Sharing Spots

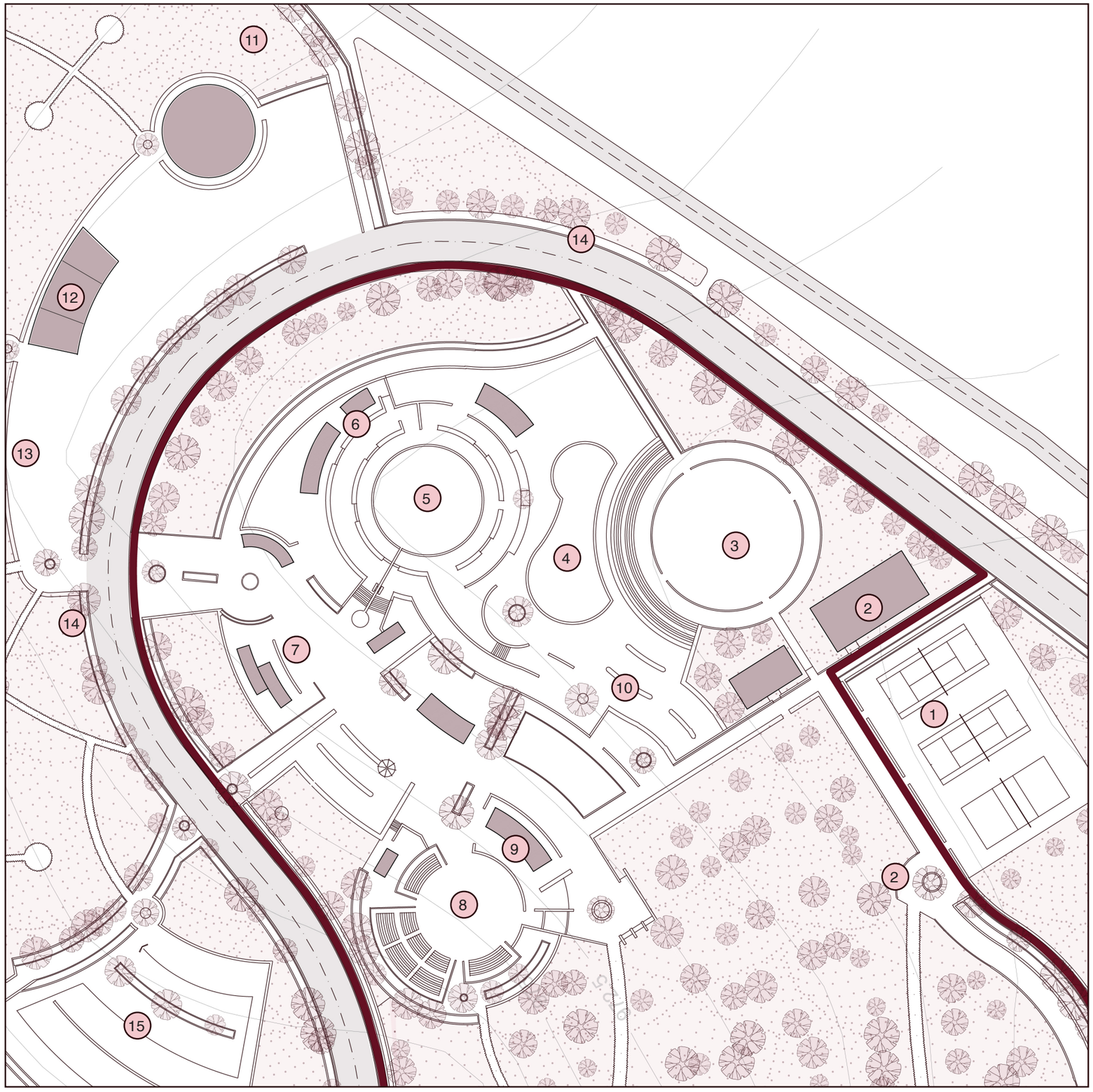


Local and Daily Markets

Camping with Dining Area, Water Fountain Park



Restaurant and Fast Food Area



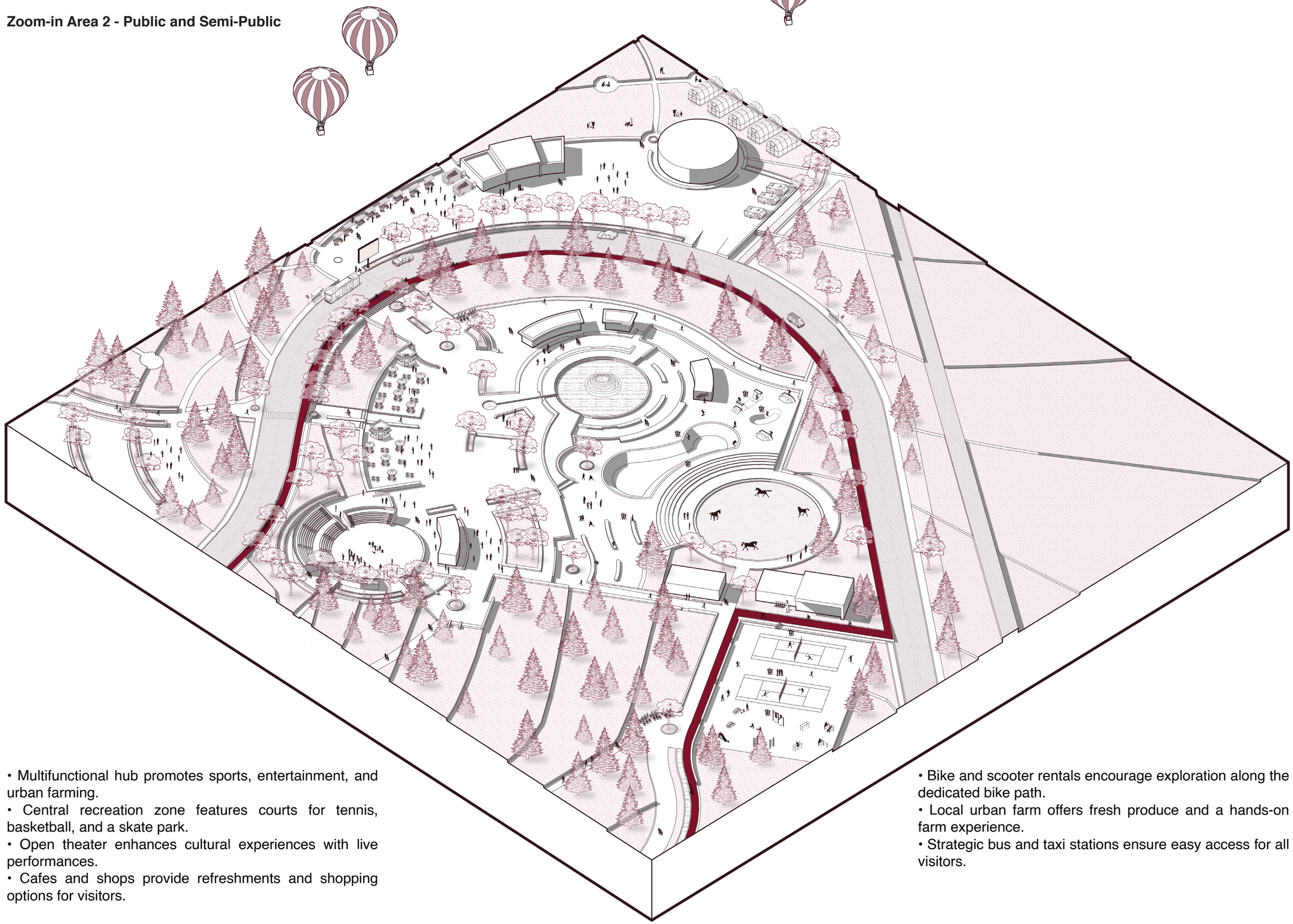
5-4.8 Zoom-In: Area 2

The area is a multifunctional recreational hub, primarily focused on sports, entertainment, and urban farming, all set within a lush, tree-surrounded environment. At its center lies a vibrant recreation and sports zone, featuring courts for tennis and basketball, a skate park, and an arena for horse riding. An open theater and stage host musicians and performances, adding cultural flair to the space.
The area also boasts cafes, shops, and rental spots for bikes and scooters, allowing visitors to explore via a dedicated bike path that winds through the site.
A local urban farm, offering fresh produce and meats, invites visitors to experience farm life and purchase goods directly from the source. Convenient accessibility is ensured with several bus and taxi stations strategically placed along the roads, making it easy for everyone to visit and enjoy this dynamic, eco-friendly destination.

Functions:

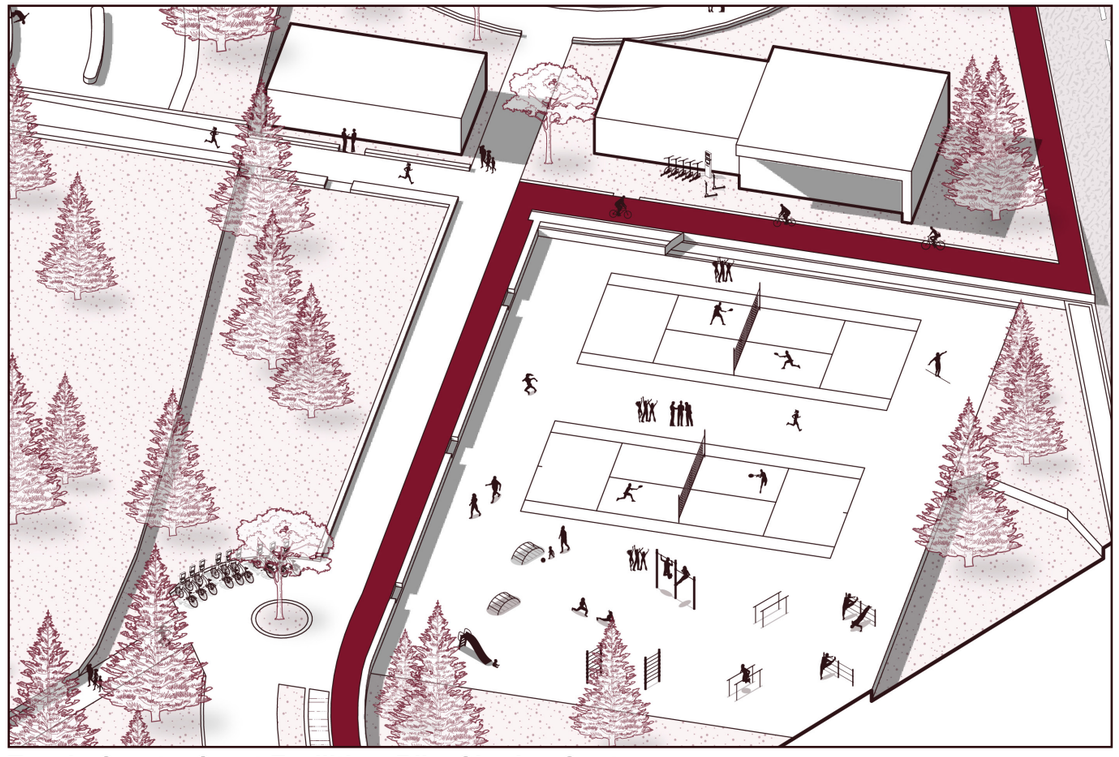
1. Sport Area, Basketball, Tennis
2. Rental Space for Bikes and Sport Facilities
3. Horse Arena
4. Skate Park
5. Water Park
6. Local Shops
7. Cafe Space
8. Stage and Open Theater
9. Theater Facilities
10 . Open Space for Sports
11. Urban Farm
12. Grocery Stores, Butcher Shops
13. Daily Farm Market
14. Bus stops
15. Recreational Space

Zoom-in Area 2 - Public and Semi-Public

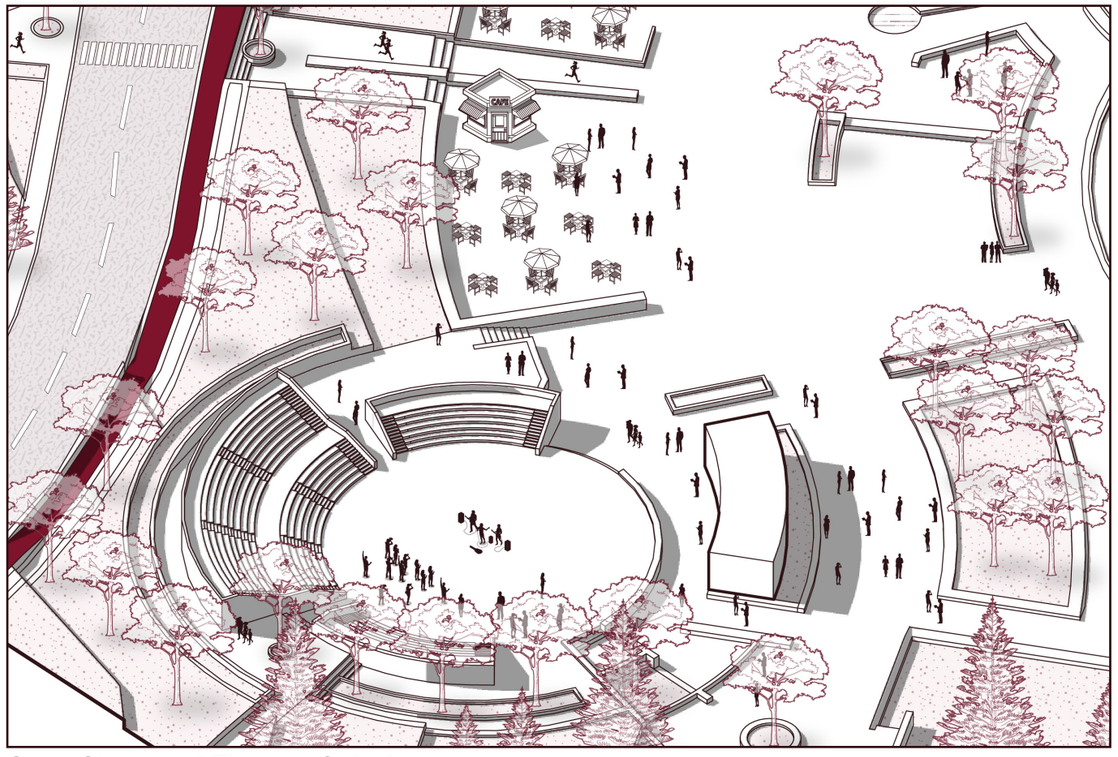


- Multifunctional hub promotes sports, entertainment, and urban farming.
- Central recreation zone features courts for tennis, basketball, and a skate park.
- Open theater enhances cultural experiences with live performances.
- Cafes and shops provide refreshments and shopping options for visitors.

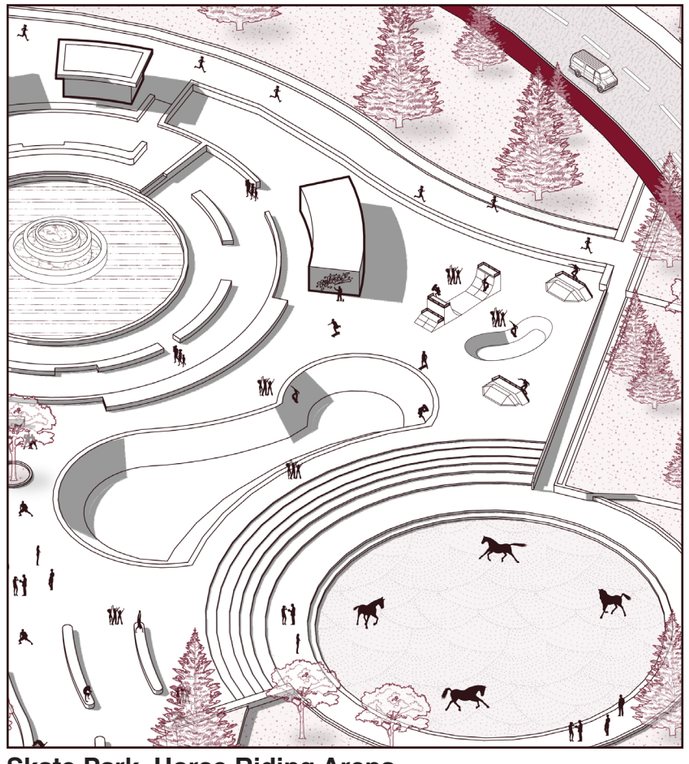
- Bike and scooter rentals encourage exploration along the dedicated bike path.
- Local urban farm offers fresh produce and a hands-on farm experience.
- Strategic bus and taxi stations ensure easy access for all visitors.



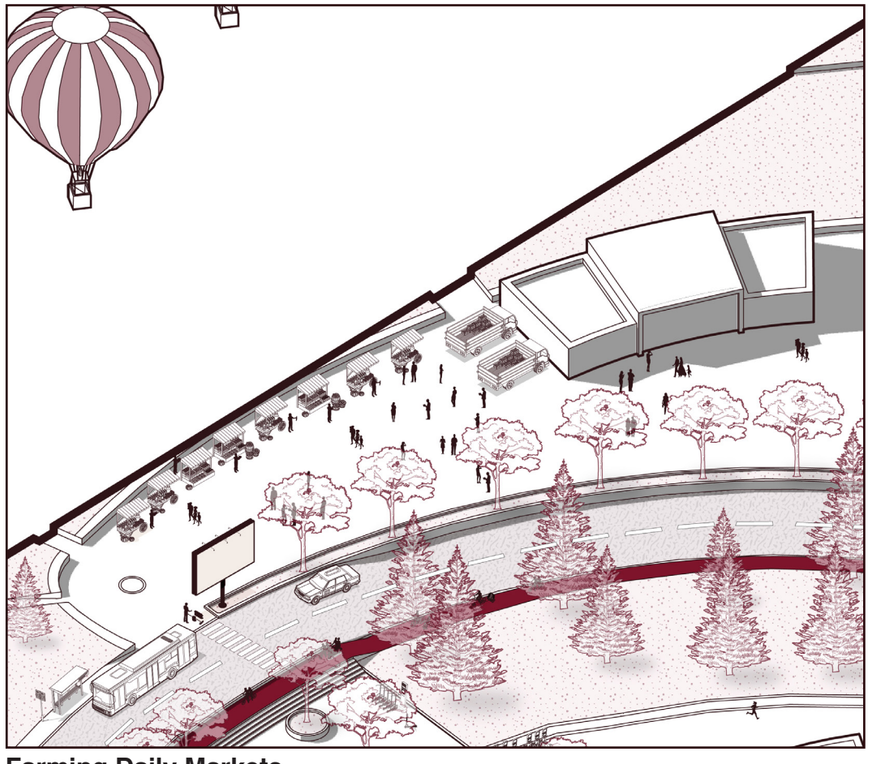
Tennis Courts, Sport Facilities, Bike Sharing Spots



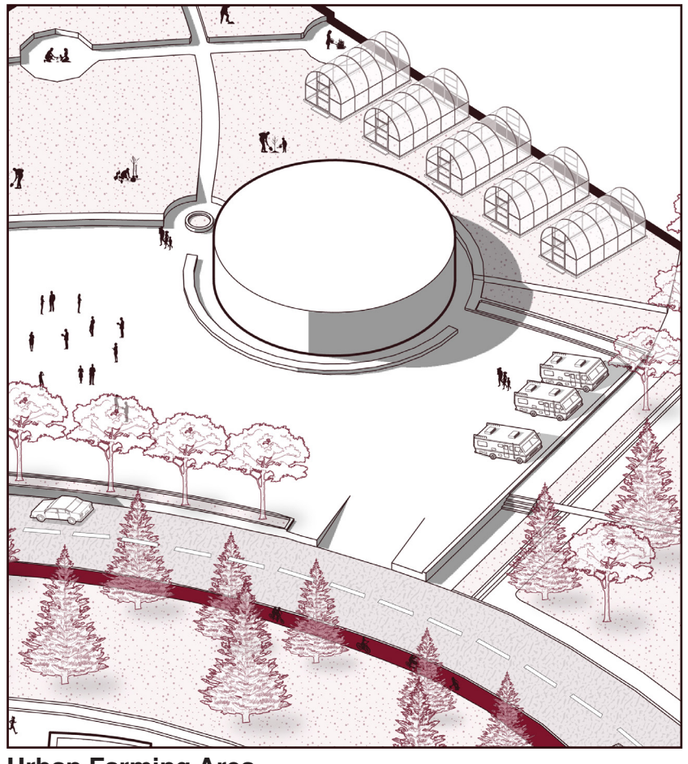
Open Stage and Theater, Cafe Area



Skate Park, Horse Riding Arena



Farming Daily Markets



Urban Farming Area

5-4.8 Zoom-in Area 3

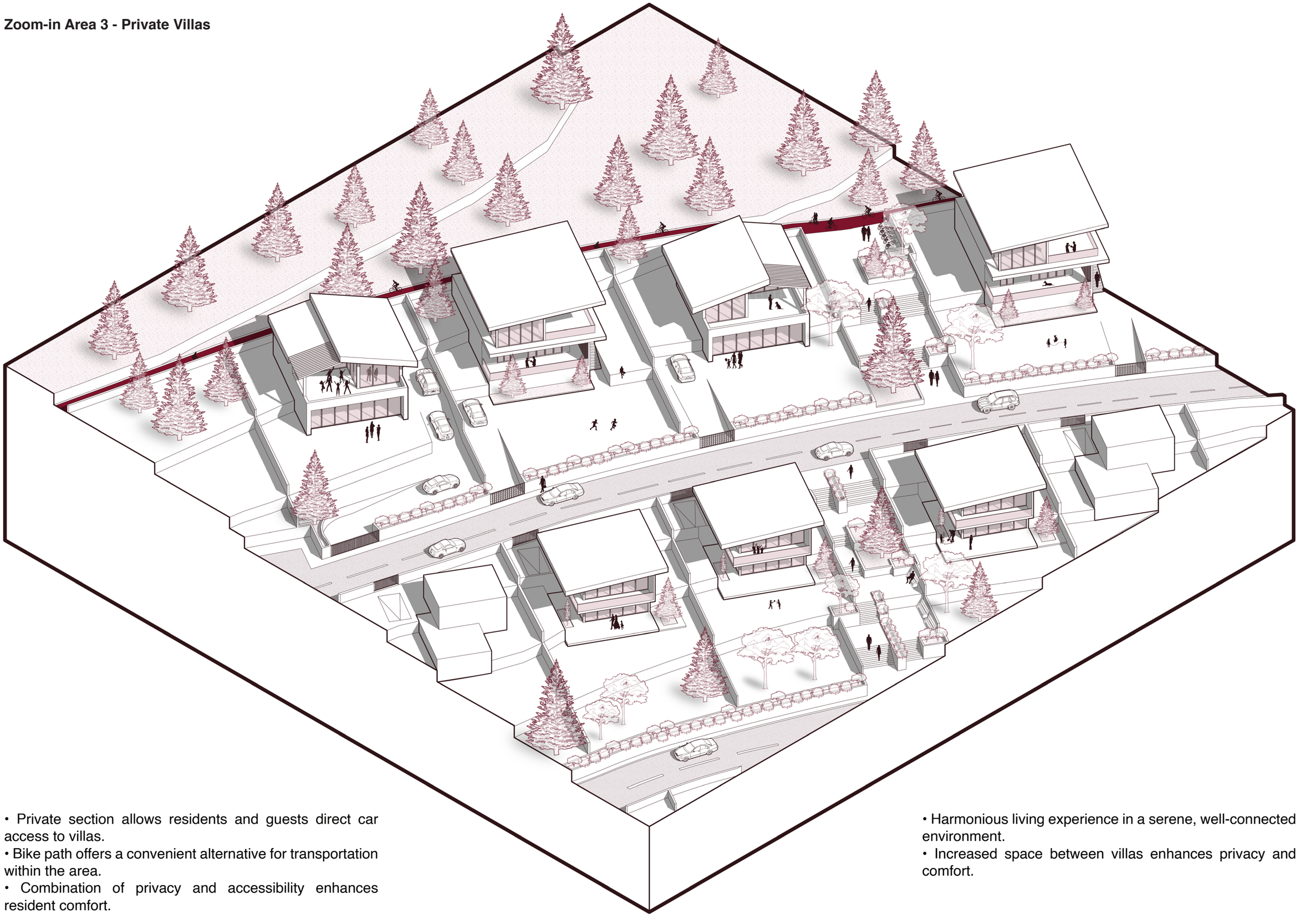
This area is a private section of the site, designed for easy access by car, allowing residents and guests to drive directly to their villas. It maintains the site's eco-friendly ethos with bike-sharing stations strategically placed along the bike path, offering a convenient alternative for getting around the area. The combination of privacy, accessibility, and sustainable transportation options ensures a comfortable and harmonious living experience within this serene, well-connected environment.

Building regulations (villas)

General regulations for the plots which has been set by the municipality of the region.

- **Plot Subdivision:** Subdividing villa garden ownership plots according to the comprehensive plan is prohibited.
- **Land Use Change**: Changing the land use of villa garden plots according to the comprehensive plan is prohibited.
- **Building Coverage**: The allowable building coverage (footprint) is 20% for plots measuring 200 to 1000 square meters, and 15% for plots measuring 1000 to 2000 square meters.
- **Number of Floors**: A maximum of two floors (excluding special service buildings such as hotels) without a basement is allowed.
- **Building Location**: The building must be constructed on 40% of the elevated part of the land, maintaining a 3-meter distance from the longitudinal sides.
- **Shadow Casting**: Shadow casting on adjacent buildings is not permitted.
- **Sloped Roofs**: Constructing sloped roofs for buildings on villa garden plots is mandatory.
- **Parking Height**: The maximum allowable height for parking is 220 centimeters.
- Floor Height: The maximum allowable height for floors is 4 meters.
- **Building Setback**: The building must maintain a 3-meter distance from the longitudinal sides of the plot.
- **Minimum Plot Size**: The minimum size for subdivided plots is 400 square meters.

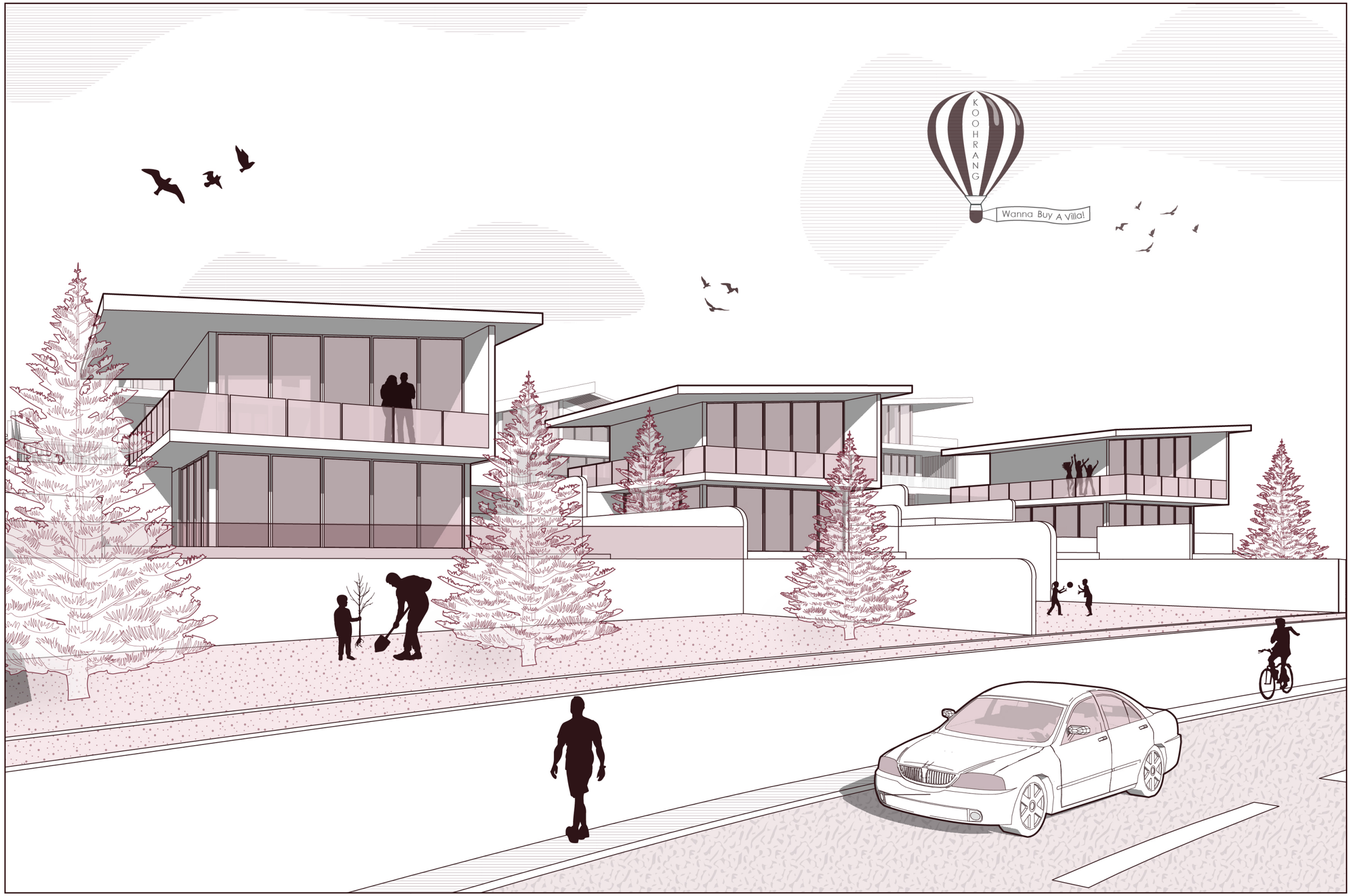
Zoom-in Area 3 - Private Villas

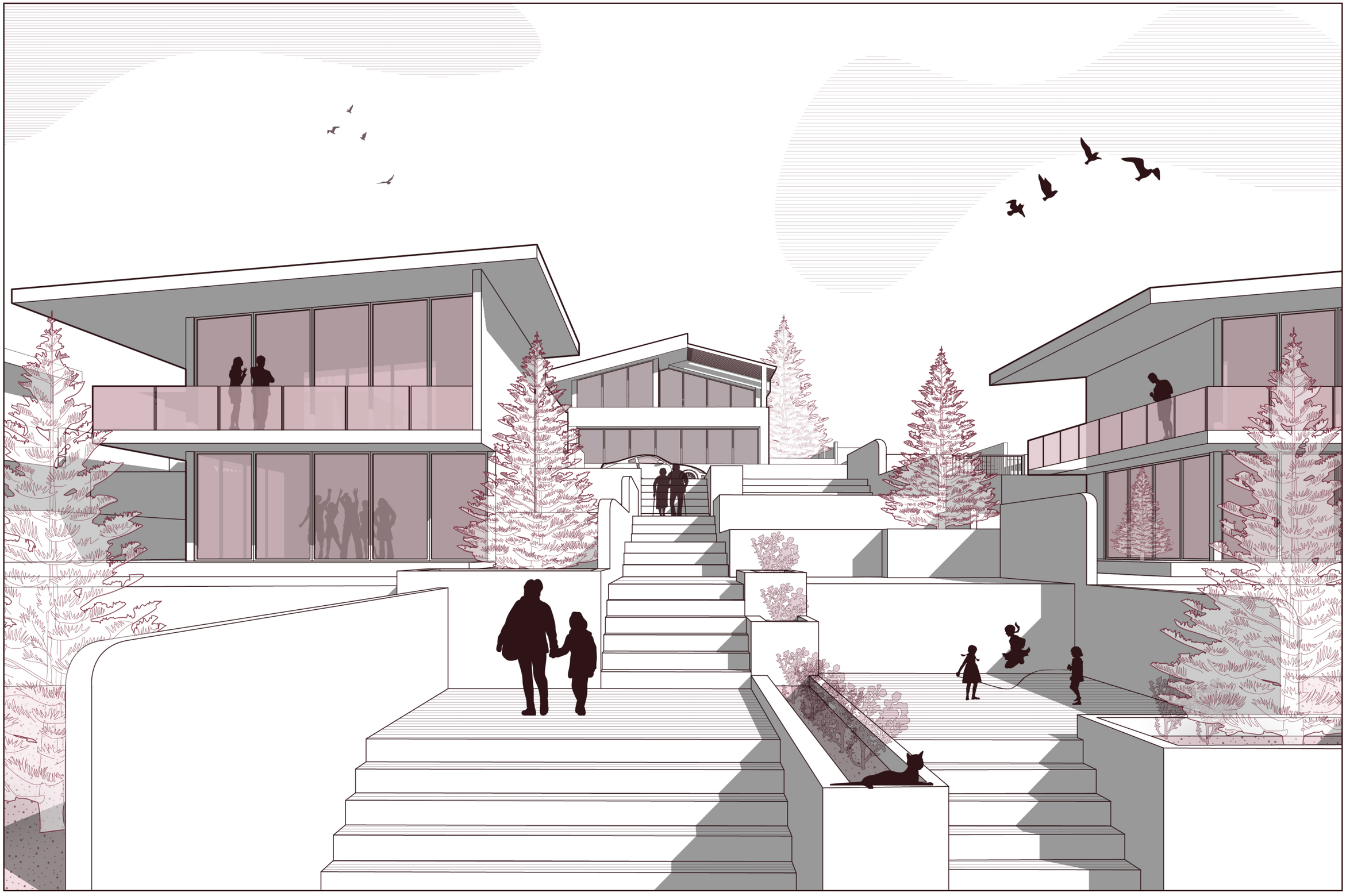


• Private section allows residents and guests direct car access to villas.
• Bike path offers a convenient alternative for transportation within the area.
• Combination of privacy and accessibility enhances resident comfort.

• Harmonious living experience in a serene, well-connected environment.
• Increased space between villas enhances privacy and comfort.


BMW X5


KOOHRANG
Wanna Buy A Villa!



06/
Conclusion

Conclusion

This thesis has shown that tourism is not just a way to boost the economy but also an important factor for the social development of regions that have rich natural resources and cultural heritage but are not fully utilized due to poor infrastructure. The case study examined in this thesis serves as a clear example of how carefully redesigning an existing tourism master plan can transform a location with untapped potential into a sustainable and functional tourist destination. The findings illustrate that with thoughtful planning, a region can effectively use its assets, ensuring both economic growth and environmental protection.

The initial chapters of this thesis provided a thorough overview of the larger context of tourism and eco-tourism, laying the groundwork for understanding the specific challenges faced by the target region. By exploring ideas such as recreation, leisure, and the unique aspects of mountain tourism, the thesis highlighted the special qualities that make certain areas appealing to visitors. In the context of Iran's diverse landscape, which boasts rich cultural heritage and natural beauty, it became clear that the potential for sustainable tourism is vast, yet often hindered by outdated planning methods and infrastructure problems.

Examination of the Current Landscape

The detailed analysis in this thesis revealed several important factors that contribute to the weaknesses of the existing master plan. Through the SWOT analysis, it became clear that while the region has many strengths—such as beautiful landscapes and cultural attractions—these are often overshadowed by weaknesses in tourism infrastructure, such as limited access, lack of facilities, and inadequate marketing strategies. This analysis emphasizes the need to align the master plan with both the natural and cultural features of the region, as well as the needs of potential visitors.

Moreover, the qualitative research conducted throughout the thesis provided valuable insights into user experiences and expectations. Engaging with stakeholders, including local residents and potential tourists, helped identify key areas for improvement and revealed a strong desire for a tourism model that prioritizes sustainability and community involvement. This participatory approach ensures that the redesigned master plan is not only responsive to user needs but also fosters a sense of ownership among local communities, enhancing the overall tourist experience while promoting local culture and heritage.

Redesigning the Master Plan

The proposed redesign of the master plan emerged from careful consideration of both environmental and social factors, emphasizing bioclimatic and microclimatic strategies to optimize site functionality. The plan includes green spaces, sustainable transportation options, and eco-friendly accommodations, aligning with current trends in sustainable tourism development. By creating a plan that integrates seamlessly with the natural landscape, the new master plan addresses critical weaknesses in the original design while ensuring the preservation of the area's unique environmental features.

Naturalistic Benefits: One of the major advantages is its potential to enhance the region for tourist use while maintaining environmental sustainability. By integrating carefully designed cycle paths, nature trails, and a variety of winter and summer activities like alpine skiing, mountaineering, and etc. These initiatives not only create opportunities for tourists to engage deeply with nature but also generate resources that can be reinvested into further environmental preservation and enhancement. This balance between tourism and conservation helps create a positive feedback loop, where tourism supports ecological sustainability, and the improved environment, in turn, attracts more eco-conscious visitors.

Economic Benefits: By organizing tourist activities around both winter and summer seasons, the master plan can promote sustained economic growth. Locally, it will create jobs, stimulate investment in infrastructure, and encourage the growth of related businesses such as hospitality, retail, and services. Additionally, the economic benefits are not confined to the immediate area; they will ripple through surrounding regions as well, enhancing broader regional development.
Successful examples of alpine tourist enhancement, such as Bardonecchia and Sestriere, serve as benchmarks for how such investments can lead to long-term financial benefits for both communities and businesses.

Social Impact: A master plan that includes settlement development contributes directly to the establishment of local societies. As tourism increases, local residents begin to create communities rooted in new economic opportunities and shared experiences with visitors. This growth fosters the development of unique customs, traditions, and social practices tied to the region's natural environment and tourism activities. Over time, this forms a deep connection between the local population and their surroundings, helping to preserve cultural identity while promoting a sustainable way of life.

Cultural and Educational Impact: Beyond the immediate environmental, economic, and social benefits, the master plan offers an opportunity to raise awareness about sustainable practices and cultural heritage. Through interactive experiences, eco-tourism educational programs, and cultural initiatives, visitors will be encouraged to appreciate the region's history, biodiversity, and environmental importance. This educational aspect not only enhances the visitor experience but also reinforces the necessity of protecting natural landscapes for future generations.

Implications for Sustainable Tourism Development

The insights gained from this thesis have broader implications for the field of sustainable tourism development. The case study shows how informed design and careful planning can turn underutilized regions into thriving eco-friendly tourist destinations. This change not only benefits the local economy but also helps preserve cultural and natural assets, ensuring that tourism serves as a positive force rather than a cause of environmental harm.
Additionally, the thesis highlights the need for collaboration among stakeholders, including government entities, local communities, and private businesses, in the planning and execution of tourism projects. By building partnerships that focus on sustainability and community involvement, regions can create a well-rounded approach to tourism development that reflects the values and aspirations of both residents and visitors.

Future Research Directions

While this thesis has established a solid understanding of the challenges of sustainable tourism development in the examined region, it also suggests areas for future research. Further studies could explore the long-term effects of the implemented master plan on the local economy, community well-being, and environmental sustainability. Additionally, comparative studies of similar regions could provide insights into best practices and innovative strategies for overcoming common challenges in tourism development.
In conclusion, this thesis emphasizes the transformative potential of sustainable tourism, highlighting the importance of adaptable planning and community engagement. By rethinking tourism development in line with environmental and social considerations, regions can unlock their full potential, leading to not only economic growth but also a sustainable future for generations to come. The case study serves as a model for other regions seeking to navigate the complexities of tourism development, ultimately contributing to a more sustainable and fair global tourism landscape.

07/
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List of Figures

“All figures are made by the authors, except where other sources are specified.”

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