Sustainable Design Of The Mountainous Tourist Recreational Spaces (Case Study: Abidar Park In Sanandaj City)

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ABSTRACT: One of the main goals of sustainable development is nature conservation and the improved look toward it. Recognition of sustainable architecture is affective in attracting tourism, anticipating the requirements and eliminating the deficiencies of each region. Nowadays, it has been proved that the proposed solutions to environmental problems in sustainable architecture seem to be inefficient and incomplete since they still have a discrete viewpoint toward nature. Nevertheless, using the strategies appropriate to sustainable designing and considering the particular climate of the area under study (Sanandaj), it has been tried to pay special attention to sustainable architecture of environmental issues; ultimately, following the basic principles of sustainable design, tourist complexes develop. The present paper is an applied research in the field of architecture that aims at creating a space with tourist and recreational function in Abidar Mountain in Sanandaj. During the process of planning, designing the form and appropriate construction of the project, consistency with sustainability goals of the space has been highly considered. According to the researches done, which are available in the documents of the upstream project in the field of tourism, designing and construction of tourist complexes (Tourist facilities) is of the necessities in this area. The method is library-research and field studies that provided the basis on which the final design is proposed.

KEYWORDS: Sustainable development, sustainable architecture, ecotourism, tourist recreational design

I. INTRODUCTION

Today, we have been placed on the verge of a major transformation in our way of treating technology and environmental issues. In the 20th century, the human population has grown at an intensity that is unprecedented in history. Rapid population growth and increase of the cities and towns have caused the loss of valuable natural resources; therefore, in order to tackle with ecological crises and the ending of fossil energies, turning toward recyclable energies is an inevitable issue that will have a significant impact on all aspects of human life. The objective of this study is to investigate the theoretical aspects of sustainable architecture with an emphasis on designing spaces that will have a significant impact on the attraction and optimization of tourist spaces in the province of Kurdistan (Sanandaj City). In recent decades, a new concept has been introduced and the result of the function of the constructed environment in sustainable development, sustainable architecture, and the tourist complexes developed in this city has been highly considered. Since the UN Conference on Environment and Development held in Rio in 1992, development has become one of the most sensitive and important international environmental management issues [1]. Some concepts have been located behind this title, which have examined the efforts to solve environmental problems, natural sciences of ecology, and nature conservation concern on the one hand, and the world’s problem of poverty and destitution, on the other hand [1]. In addition to identifying sustainable architecture in anticipation of the needs, deficiencies, and tourism development, this paper estimates the recreational value of Abidar Mountain as a designing element in sustainable ecotourism, with a particular approach to the case study (Sanandaj City). Ecotourism is a new trend in the tourism industry, thus conservation of nature adds to achieving sustainable development is essential. Theoretical principles and keywords used in this study are represented below.

II. SUSTAINABLE DEVELOPMENT

Sustainability has been defined in dictionary terms of durability and maintenance of resources. According to Yuri G. Groan, in order to understand the relationship between the building and the environment, one must first regard human’s view toward the environment or generally to nature, the basis of construction is encroaching the nature, the type of such encroachment is closely related to human’s thinking about nature [2]. The concept of sustainable development is as the result of the growing awareness of global links between growing environmental problems, and social and economic issues, poverty, and inequality and concerns about a healthy future for mankind. The concept of sustainable development is amajor change in understanding the human’s relationship, nature and the relation of human beings with each other. This issue contradicts the
approach of the last two centuries which was formed by the separation of environmental, social and economic issues. This view is associated with the development of capitalism and the industrial revolution and modern science. As Bacon, one of the founders of modern science, suggests, “The world has been made, not man for the world,” therefore, sustainable development is a kind of attempt to integrate the growing concepts of the fields with social and economic subjects. Sustainable Development was credited in the Commission of World Conservation Strategy (WSC) which was convened by the International Union for Nature Conservation in 1980; this issue has also been raised by the World Commission on Development and Environment (WSC) with the titles “Our Shared Future”, in 1987 and “Preserving the Earth”, in 1991. The importance of this issue is such that the Sustainable Development Committee in the summer of 1987 offered different indicators to assess environmental capacities. As an example, one can mention such indicators as: population in mountainous areas, sustainable use of natural resources in the highlands and the population welfare in mountainous areas [3].

III. SUSTAINABLE ARCHITECTURE

Sustainable architecture is a subset of Sustainable Design that can be considered as one of the processes in 20th century. This concept is a logical reaction against contemporary issues. Figure one shows the most important sub-branches of such architecture.

![Figure 1: Important Sub Branches of Sustainable Architecture](image)

The main objectives of sustainable architecture are cited in the following [4].
- Giving importance to human life
- Maintaining and preserving human life in the present time and future
- Using materials which are homogeneous to and sustainable in environment, in manufacturing, utilization, renovation and destruction levels
- Minimizing the use of fuel energies and maximizing the use of natural energies
- Minimizing environmental degradation
- Improving mental and physical lives of human beings and the whole living creatures
- Being harmonious to natural environment.

One of the most important points in Sustainable Architecture is the call of the inhabitants. The role of architecture in making the nature significant is an issue that has been ignored. In many ways, that architecture offers, climatic view is assumed and in most of the approaches of sustainable architecture it seems that the modern look of Bacon still exists. This view insists that the management and exploitation of nature be operated in the way that it is not destroyed and still remains usable for human beings.

IV. ECOTOURISM

Broadened scope of the functions and developed thoughts of humans have caused the analysis of human behavior and the natural discovered relationships in a large number and a variety of sciences, each initiates a new framework. In the meantime, there are few human activities that simultaneously and academically have attracted the attention of economists, geographers, environmental scientists, psychologists and researchers of political science and management. Tourism is one of these phenomena. Up to 1990s, little had been written about the role of tourism in the economy and culture of cities in the books about the cities that attracted millions of visitors, and the role of tourism has rarely been referred to. Shworth noted that about 60 years, tourism has been neglected in the models of urban space. United Nations Organization defined tourist as temporary visitor from a country or a region, with the aim of business or pleasure. Perhaps all the issues that analyze such a behavior in humans are shown in this form of tourism. Tourist is principally temporary visitor; in other words, tourists someone who decides to return to his home country or region after a certain period of time.
Sustainable Design Of The Mountainous Tourist...

This form of tourism enables the leisure activities of human beings primarily in nature, and is based on the targeted traveling with gaining cultural and spiritual perceptions, visiting and studying the natural attractions and enjoying and taking advantage of their various phenomena. Ecotourism is composed of a wide range of specifications from scientific visiting to random visiting in natural areas as weekend activity. Yora peripheral part of An overall long-term travel. The environmental impact of Ecotourism is not limited to the participation of eco-tourists in leisure and recreational activities, but for the time they choose to inhabit an area and play their recreational role they require installations and equipment in the natural environment. The underlying agents and ways of access, parking, transportation vehicles, facilities and equipment, accommodation and catering services, water industry, sanitation facilities, waste disposal, etc. are examples of this kind [6]. A very important point in this regard is that natural attractions are the same, since traveling with the intention of visiting nature is mainly parallel with purposes whose most notable isclimatic change, recreation, relaxation, refreshment, mental and intellectual recreation and revitalization in order to restart working. Remember that work and leisure are always combined with one another and their function isrelational to each other. Sowe can firmly say that this specific feature which is related to ecotourism indicates the advantage of this form of tourism comparing to the other forms. Nonetheless, this has caused increase in the number of the visitors of natural attractions, national parks and other protected areas [7].

V. METHODOLOGY

The research achievements provide the theoretical principles of sustainable design based on recognition and evaluation of the environmental capacity of the area under study. These studies provide preliminary data to complete the research and also the context that the final design will be based on. Broad adaptability and understanding of the thoughts, works and books’ information and published statistics help the researcher to broaden his/her horizon of knowledge and thought, and go beyond the boundaries of the old and time-bound interpretations. Such knowledge not only broadens the circle of the researcher’s information, but also nurtures the talent of critical viewpoint in him. So, it is natural and necessary to start with studies with similar issues carried out by other researchers, and become aware of the similar aspects of one’s work with others. The data collection in this study is field-library since the widespread use of the library and thorough review of the related literature is an essential issue in making the project seminar reports and research on specific issues and these and dissertations [8]

Methods of data collection

V (a): Library (documentation): This method consists of the study of the books, papers, documents, and existing reports and using the basic information of the related organizations, such as the Mapping of the Parks Organization, Green Space, Office of the Road and Urbanism of Kurdistan, Environment, and Municipality to collect data, information, maps of the region, as well as Internet searches other ways of data collection.

V (b): Field: This method is used as the more perfect way of recognizing the area and application of the collected data including presence in the region, interpretation of environmental information and providing photographs.

VI. INTRODUCTION OF THE STUDY AREA

Kurdistan province with an area of about 28,235 square kilometers is located in the west of Iran. This province includes 1.5 percent of the whole country. It is placed between 34 degrees and 44 minutes and 20 degrees and 30 minutes of the north latitude and 45 degrees and 31 minutes to 48 degrees and 16 minutes of the eastern length from Greenwich meridian (Figure 2 and Figure 3). In its northern part, Kurdistan is neighbored to West Azerbaijan and a part of Zanjan, in south to Kermanshah, in the east to Hamadan and to the west to Iraq. Sanandaj is at 35 degrees and 17 minutes of the north latitude and 47 degrees and 18 minutes of the east length from Greenwich meridian, at an altitude of 1,570 meters above sea level. From the natural viewpoint, Sanandaj is enclosed between the hills located in space cup so that the mountains and hills which are continuations of Zagros Mountains have been drawn in the suburb and havelimit the expansion of the city in the southwestern and northeastern parts. This city is generally affected by two main streams of hot and cold weather which produce a variety of climates. Atmospheric precipitation is 500 mm per year. The city of Sanandaj has a warm temperate in spring and summer, and January is the coldest month of the year (Inclusive Studies of Sanandaj).

www.ijesi.org 24 | Page
The intended site for designing is a part of Abidar mountain (the name of a mountain overlooking the city of Sanandaj in Iran's Western part; this mountain with an altitude of about 2550 meters is one of the main resorts of people). What has caused the popularity of the mountain is its propinquity to the city of Sanandaj, its higher altitude comparing its surrounding hills and, above all, the existence of many underground springs [9]. The mountain’s nearness to the town is to the point that in its hillside housing construction has so far been carried out and is already underway. Many people (especially on vacation) go to this resort and visit the City’s perspective. There is a very beautifully constructed forest park in the mountain that annually attracts a large number of tourists, and there are some places for camping there. Because the project site is located in the lush plain surrounded by mountains, its Sustainable Design with nature is a very significant issue so that in addition to placing facilities in that location, the form of the Mountain and the natural landscape won’t be damaged (Fig 4 and Fig 5).

In order to achieve a harmonious design with the design matrix of the tourist-recreational resort of Sanandaj, various functions are distinguished and a good communication is established between them. The design includes several separate buildings that are scattered across the site. This feature makes the users of the complex strongly associate with nature and feel the presence of the mountains more. Figure 6 indicates the design targets.
Sustainable Design Of The Mountainous Tourist...

Figure 6: Design Target of the Research

The total area intended for designing the entertainment set is 11,485 square meters; the occupied space in the site was considered an area of 2906 square meters, and the landscape on the site is 5012 square meters. Figures number 7, as well as the view, perspective and accessibility of the site.

Figure 7: View and Perspective of the Site

The design of this set consists of several buildings, service, accommodations, entertainment, sports, administrative and medical buildings related to each other by pavements or natural rocks, which show the directions. Another part is the space in the site including residential suite modeling after Ormanat (Stone Architecture), an artificial lake, a health road, alcove and a roadster track (Figure 11).
Figure 11: Final Design of The Site

At the beginning of the design process, due to the limitations of the natural structure of the site location and the nature of the site, it had been trying to establish a set plan in harmony with nature, so that in the first sight the complex seems not to be extraneous or abnormal. In order to harmonize the plan, available forces of the site and its capacity were reviewed. These forces include the location of the natural slope (topography) in different parts of the site, and a good view and perspective of the mountains and the sky-line created by the mountains. The results obtained by the analysis of these factors show that the site operated in line with the natural environment and had a firm movement like a mountain. Also, the set design has taken into account the topographic lines and natural forces for each level of the work. Then in the process of the plan designing of the set, sustainable architecture (using green roofs, minimizing the damage to the environment, using material harmonious to the regional climate, using the trees within the site as a delimiter for the buildings on the site) was applied. Utilization of the mountainous wilderness in proportion to sustainable architecture goals also affected the plan and the set, so that with their advent to the complex, the tourists experience memorable moments.

V II. CONCLUSION

In designing this set, natural and climatic factors, reduction of negative impacts caused by natural factors in the tourist and recreational complex, better use of the positive characteristics of the climate in the building design, and the users' welfare have been considered. Sanandaj is a city with cold and dry winters and pretty hot summers. In designing this project it was tried to observe the functional aspects, sustainable architecture, and homogeneity with nature, all together. A kind of convergence with nature, clarity and being a partial structure of nature can be felt in the function of this complex. The form of this complex is responsible to the needs of the tourists and visitors. In terms of view and perspective, in that it is in the building form, made the tourists feel themselves in the mountainous nature. Providing natural environment in this project and use of some spaces to have a better perspective or view of nature, using rock and stone materials in the bottom to avoid high humidity and using a buffer of the existing trees on the site as a delimiter, are of the advantages of designing this set so that those who have escaped from the smoke of the cars into nature feel deep tranquility and calm. This study was proposed to promote the organization of tourist spaces in Kurdistan province and its main objective is not a sustainable design of a formal style but it contains within itself deep concepts which link human, nature and architecture.

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