



Evaluation of Traditional Şirince Houses According to Sustainable Construction Principles

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Abstract

Şirince is a village which has unique traditional building samples and which is heavily influenced by the influx of tourists in the summer season for the last decade. Many buildings in Şirince have changed function due to tourism activities and a significant amount of them have been renovated. Besides, some new buildings has been constructed from modern building materials such as reinforced concrete in the settlement. Since the management plan has not yet put into force in the region, excessive interventions can be seen in renovations and restorations. However, the settlement is still facing a decrease in population for some reasons. In order to preserve the population of Şirince the sustainability of the region has to be ensured and the existing historical and architectural texture has to be preserved.

This study mainly focuses on the evaluation of Şirince according to sustainable construction principles and suggests some interventions in order to increase the sustainability. As a first statement it can be mentioned that, tourism has to be viewed as a means rather than an end to improve the sustainability of the settlement. The constructions has to be carried out according to ecology based principles, a healthy built environment has to be created and non-renewable natural sources has to be used efficiently to increase the sustainability in constructions.

Keywords: Cultural heritage, rural settlement, traditional houses, sustainability, sustainable construction

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Excessive restoration interventions has to be prevented, traditional materials and techniques has to be preserved. Reusing and recycling of materials has to be evaluated in order to make environment-friendly applications.

INTRODUCTION

Anatolia, which is one of the oldest settlements in history, has hosted many important civilizations since the prehistoric times. The people of Anatolia have had important livelihoods and before the increase of urbanization most of the people lived in rural areas in Anatolia. The technological developments which emerged after the Industrial Revolution firstly increased the urbanization and then caused migration from rural areas. The livelihood diversification resulted with a decrease of population in these regions. However rapid urbanization has led to significant environmental, social and economic problems in urban areas and therefore recently rural areas have become attractive to many people. Although there has been a certain amount of migration from urban to rural areas during the last few years, the population decrease in rural areas still continue for some reasons.

It is crucial to ensure a sustainable development in rural areas by protecting the population of these regions and by providing the economic development. “The Rural Development Program” prepared by the Ministry of Development is an important step which is taken by the government for this purpose. This program, which is prepared within the scope of the EU (European Union) accession process and planned to be put into practice gradually, aims to establish the current situation of the rural areas and presents the steps to revive these regions. The program includes topics such as; improving agriculture, animal husbandry, infrastructure services and education, using renewable energy sources efficiently and preserving the existing texture of the region.

The preservation and management of historic remains, monuments and traditional buildings, which have the characteristics of cultural heritage, is also very important in ensuring a sustainable development in rural areas. This approach has gained importance all over the world in recent years, and some important organizations such as UNESCO and ICOMOS have taken steps to protect and manage the cultural heritage properly. One of the most important action which has to be taken for this purpose is to prepare a proper management plan for the region (Akdogan, 2007). Management plans include topics such as; agriculture, education, management and preservation. However, the preservation of existing buildings is one of the most important



of these topics in protecting the historical and architectural texture of the region.

In this study, the general characteristics of traditional Şirince houses, the properties of the settlement according to sustainable construction principles and the measures which can be taken to increase the sustainability of the region are mentioned.

SUSTAINABLE CONSTRUCTION PRINCIPLES

The sustainability concept is being discussed since the mid-20th century and is mainly based on the idea of excessive consumption of natural resources will not be beneficial for human beings in the long term. The rapid growth of human population has led an increase in the need for construction and resulted with an excessive consumption of natural resources. Therefore construction industry was associated with the sustainability concept.

Construction industry, which has a significant share in the global economy and consumes the highest amounts of natural resources, can be sustainable by producing structures that use natural resources efficiently, creating healthy environments and building ecological structures. The principles of sustainable construction can be divided into four main groups as; social, economic, biophysical and technical sustainability (Hill & Bowen, 1997).

Social Sustainability

Social sustainability defines the principles to improve the quality of human life during construction process. In order to ensure social sustainability; it is crucial to design for everyone (according to age, health conditions, etc.), to protect health, to create a healthy environment and to manage the use of hazardous substances during construction.

Economic Sustainability

Economic sustainability defines the activities that support the economic development of the construction industry with an environmental responsibility which recognizes that some non-renewable natural resources are inevitable in the near future. Accordingly, it is necessary to work with suppliers and contractors who can demonstrate environmental performance, to produce structures which create employment to local people and to be economically appropriate to the target group.

Biophysical Sustainability

Biophysical sustainability states that construction industry has to use ecology supportive systems in construction which also means

to create an ecological design (Figure 1). Energy, water, materials and land consumption, which is caused by the construction industry, has to be reduced. Materials and processes, which is used during construction process, has to have low embodied energy and low toxicity. The construction systems also has to be non-hazardous to the biodiversity of nature and minimize air, land and water pollution.

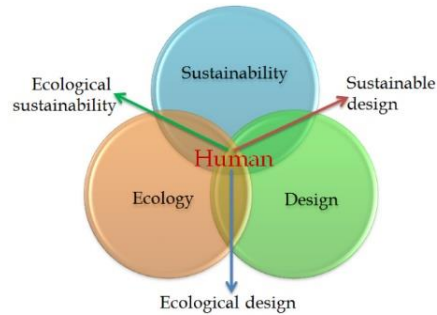


Figure 1. The relationship between sustainability, ecology and design

Technical Sustainability

Technical sustainability implies to construct durable, reliable and functional buildings. While durable buildings usually save energy and create less solid waste, the systems which are used to extend the useful life of constructions are generally wasteful. Correspondingly, dehumanized larger buildings use very complex systems which are not eco-friendly, but smaller buildings can be modified to meet the changing needs of the user without giving harm to the environment. The four main groups and principles of sustainable construction can be summerized in Table 1.

Table 1. Principles of sustainable construction (Hill & Bowen, 1997)

Social sustainability	Economic sustainability	Biophysical sustainability	Technical sustainability
Improve the quality of human life	Ensure financial affordability for intended beneficiaries	Reduce the use of four generic resources, which are energy, water, materials and land, used in construction	Construct durable, reliable and functional structures
Protect and promote human health through a healthy and safe working environment	Promote employment creation	Maximize resource reuse and recycling	Pursue quality in creating the built environment



Seek equitable distribution of the social costs and benefits of construction	Adopt policies and practices that advance sustainability	Use renewable resources in preference to non-renewable resources	Humanize larger buildings
Design for everyone	Work with environmentally responsible suppliers and contractors	Minimize air, land and water pollution at global and local levels	Revitalize existing urban structure by rebuilding mixed-use pedestrian neighborhoods
		Create a healthy, non-toxic	
		Minimize damage to sensitive landscapes, including scenic, cultural, historical and architectural	

Traditional Şirince houses has always been consistent with sustainable construction criteria. However, there are some unsustainable applications in the settlement for the last few years. The environmental impact of modern practices, excessive interventions in restorations and increased tourism activities of the settlement are some examples of recent applications. The properties of traditional Şirince houses has to be evaluated according to sustainable construction principles in order to improve the current situation of the settlement.

GENERAL PROPERTIES, HISTORY and ARCHITECTURAL TEXTURE of ŞİRİNCE

Location

Şirince is located 86 km southeast of the center of İzmir, in western Anatolia in Turkey. It is a small, inland village of Selçuk District and the village is reached by an 8 km narrow road from the center of the district. Selçuk is located on the İzmir-Aydın highway and the district is 55 km away from the İzmir International Airport. Besides Kuşadası Port is only 20 km from Selçuk (URL 1, 2019). Therefore, it is easily accessible by land, air and sea which can also be seen in Figure 2. Selçuk is a historic point which includes many important historical properties such as Ephesus, the Temple of Artemis and the House of Virgin Mary. Correspondingly, Şirince has always been an important settlement from past to present.

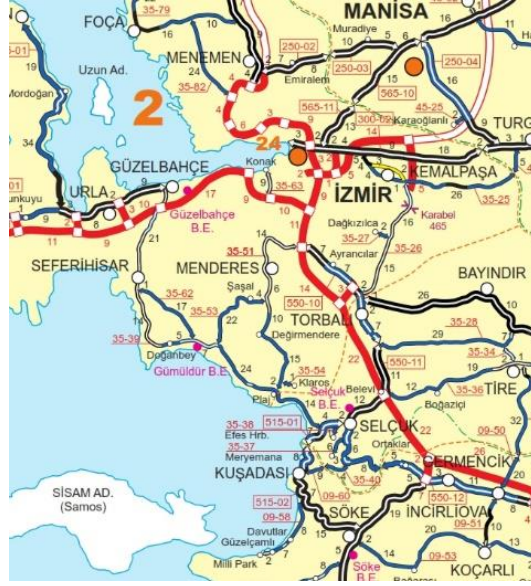


Figure 2. Location of Şirince Village (URL 1, 2019)

Climatic Data

Şirince has a typical Mediterranean climate similar to İzmir. It has hot and dry summers reaching to 34°C, while the winters are cold and wet with a minimum temperature of 6°C. According to the meteorological data, the maximum temperature observed to date was 43°C on 12 August 2002 and the lowest temperature was -8.2°C on 04 January 1942. The climatic data of İzmir was obtained from Turkish State Meteorological Service records. The monthly average temperature values, the number of rainy days and the bright sunshine duration of the city was given in Figure 3.

35

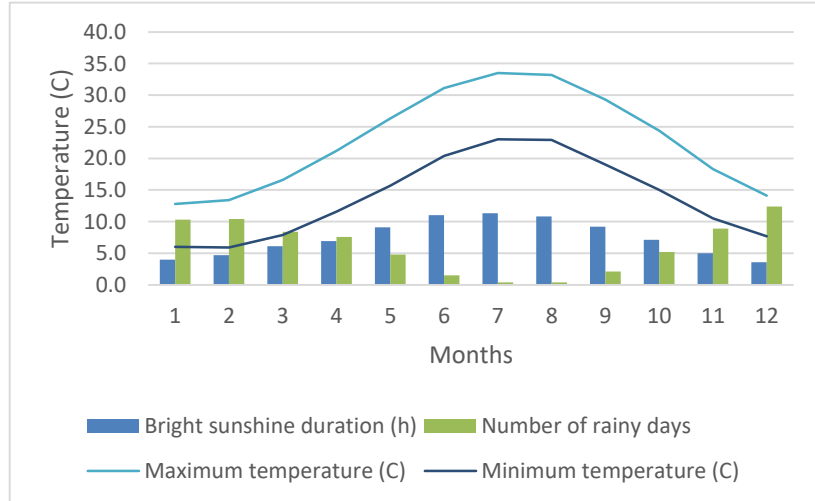


Figure 3. Climatic data for İzmir (data taken from Turkish State Meteorological Service)

History and Development

Although the settlement includes historical remains belonging to Hellenistic, Roman and Byzantine periods, the written documents indicates that Şirince's (meaning "pleasant" in Turkish) history dates back to 14th century. The name Çirkince (meaning "unpleasant" in Turkish), which was the previous name of Şirince, has been firstly traced in a 16th century document. After the

construction of the John Baptist Church and the discovery of the House of Virgin Mary at the 18th century, the settlement has gained importance and its population has increased. According to the written sources of the period, it can be mentioned that Şirince is a settlement of the Ottoman Empire, the population was nearly 4000 and mainly comprised of Greeks (Akdogan, 2007; Uyar, 2004).

The collapse of the Ottoman Empire and the acquisition of the War of Independence had important effects on Şirince just as many other settlements of Anatolia. After the “Turkish-Greek Population Exchange Agreement” which was signed in Lausanne on January 30, 1923, there was a significant change in the population of Şirince. As the number of population settled in Şirince was less than the population returned to Greece, some buildings remained abandoned. Due to some elements and materials were extracted from the abandoned buildings and used in the renovation of other buildings, the structural and spatial deformation has been accelerated in Şirince (Akdogan, 2007; Uyar, 2004).

The preservation necessity of Şirince became an important issue over the years depending on its existing historical and architectural texture. Correspondingly, in 1982 the conservation studies of the region started with a proposal of a management plan. In 1984 Şirince was designated as a historic site and 88 traditional buildings were registered as historic buildings. In 1997 the historic site of Şirince was enlarged to its present borders and the surrounding area of the settlement was designated as a natural site. A general view and some important landmarks of the village can be seen in Figure 4.

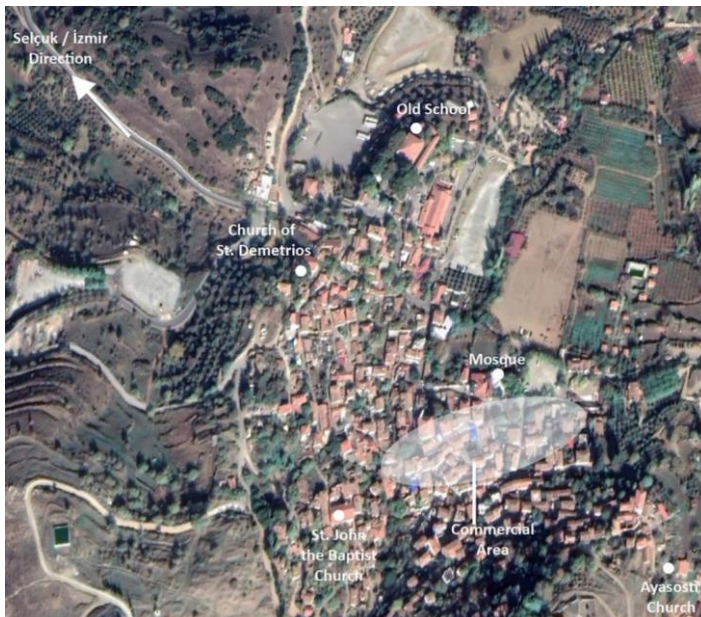


Figure 4. Aerial view of Şirince village (edited from Google Earth)

The management plan studies of Şirince, which was started by the Ministry of Culture and Tourism, has not been accepted and put into force due to some disputes and is still on-going (Akdogan, 2007; Kilinc-Unlu, 2011).

Although the popularity of Şirince has increased with the influence of surrounding tourism centers and attracts a significant amount of tourist and investor for the last decade, the level of urbanization is increasing throughout the country and the population of Şirince is still decreasing. According to the data of The Rural Development Program which was prepared by the Ministry of Development, the rate of population living in rural areas was 56.1% in 1980 and this rate has decreased to 35.1% in 2010 as can be seen in Table 2.

Table 2. City and village population, 1927-2000 (Turkish Statistical Institute Table 1, 2018)

Census year	Total	City population	Village population	Proportion of city and village population in total (%)	
				City	Village
1927	13 648 270	3 305 879	10 342 391	24,22	75,78
1935	16 158 018	3 802 642	12 355 376	23,53	76,47
1940	17 820 950	4 346 249	13 474 701	24,39	75,61
1945	18 790 174	4 687 102	14 103 072	24,94	75,06
1950	20 947 188	5 244 337	15 702 851	25,04	74,96
1955	24 064 763	6 927 343	17 137 420	28,79	71,21
1960	27 754 820	8 859 731	18 895 089	31,92	68,08
1965	31 391 421	10 805 817	20 585 604	34,42	65,58
1970	35 605 176	13 691 101	21 914 075	38,45	61,55
1975	40 347 719	16 869 068	23 478 651	41,81	58,19
1980	44 736 957	19 645 007	25 091 950	43,91	56,09
1985	50 664 458	26 865 757	23 798 701	53,03	46,97
1990	56 473 035	33 326 351	23 146 684	59,01	40,99
2000	67 803 927	44 006 274	23 797 653	64,90	35,10

The Turkish Statistical Institute declared the rate of population living in rural areas as 7.5% in 2017 (Ministry of Food Agriculture and Livestock, 2013). The population of Şirince decreased from 839 to 468 in the 1980-2018 period (Turkish Statistical Institute Table 2, 2018).

One of the most important reasons of the population decrease of Şirince is that it focuses entirely on tourism. While agricultural activities were common in the previous years, tourism activities became increasingly popular for the last decade. A significant amount of traditional buildings were refunctionalized and some buildings were reconstructed for touristic purposes during this period.

Nevertheless, Şirince's tourism mainly depends on weekend tourism other than the summer season. Therefore most of the young residents live in the nearby settlements during the low season by causing a population decrease in Şirince. In order to preserve the population of the settlement the sustainable development of Şirince has to be ensured and the existing historical and architectural texture has to be preserved.

Architectural Features of Traditional Şirince Houses

The general characterization of traditional Şirince houses does not differ from the vernacular architectural tradition of Anatolia which is composed throughout centuries. The structures are effectively designed anonymously by taking advantage of local material and resources, adapting to environment and climate, respectful to the surrounding buildings. The houses are situated parallel to the topography and their heights are usually the same in order not to prevent the view of the surrounding structures (Bektaş, 2014; Erdem A.; Yergün U., 2015; Kuban, 2017). A general view from the village can be seen in Figure 5.



Figure 5. A general view of Şirince

Most of the traditional houses in Şirince are two-storied, while a few of them are built one or three-storied. The foundation and ground floor of the structures are built with stone and lime mortar is used as the binding material. While the upper floors of the back façade can also be built with stone, they are mostly built with adobe filled wood. The planimetric properties of traditional houses were highly affected by the socio-cultural elements and the religious rules of the region. Therefore the ground floor of the structures are mostly built without or with a minimum amount of openings and mainly closed to the outer space. The oriels and bay windows on the upper floors create an interaction with the street.

Wooden lintels span above the door and window openings, and also usually in walls to support the system. Stone walls can be used uncoated, but they can also be plastered with lime. The upper

floor and partition walls are plastered with lime and then painted with whitewash. The roofs of traditional Şirince houses are mostly pitched and covered with traditional tiles. A suitably renovated typical traditional Şirince house can be seen in Figure 6.



Figure 6. A suitably renovated traditional Şirince house

The houses can be built with or without a courtyard according to the size of the land and as most of the daily work takes place on the ground floor, courtyard is usually the main working space of the house. Spaces such as; warehouse, poultry house, barn, etc. are also located on the ground floor. The upper floors are designed as living space. A typical plan of a traditional Şirince house with a courtyard can be seen in Figure 7.

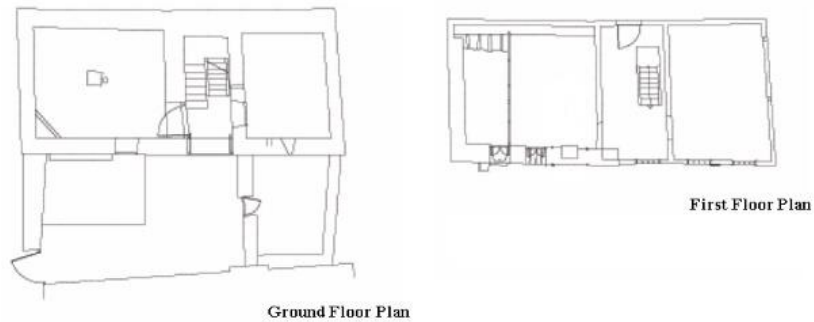


Figure 7. A typical plan of a traditional Şirince house with a courtyard (Uyar, 2004)

In conclusion, traditional Şirince houses are generally built with local building materials and are respectful to the nature and the surrounding buildings. However, some modern interventions and applications are not constructed with an ecological and sustainable approach. In order to ensure the sustainability and preserve the existing texture of the region, first of all an evaluation of the existing properties has be made according to sustainable construction principles. Correspondingly, precautions has to be

taken to prevent the deterioration of the existing texture of Şirince.

EVALUATION of TRADITIONAL ŞİRİNCE HOUSES ACCORDING to SUSTAINABLE CONSTRUCTION PRINCIPLES

Strengths and Weaknesses of The Village

In order to evaluate the properties of traditional Şirince houses according to sustainable construction principles, firstly the current situation, the strengths and weaknesses of the region has to be determined. According to the results of the evaluation a framework should be proposed to improve the weaknesses and to use the strengths as benefits. In this way, the sustainability of the region should be ensured, the existing texture should be preserved and environment-friendly applications should be performed. The strengths and weaknesses of Şirince which are obtained from a previous study (Akdogan, 2007) and from the local authorities by the author can be seen in Table 3.

Table 3. Strengths and weaknesses of Şirince village

Strengths	Weaknesses
Registered as a historic site	The tourism activities mainly depend on weekend tourism
176 registered historic buildings	Agricultural activities has been decreased for the last years
Cultural tourism attractiveness	Decrease of population due to migration from the village
Having a conservation plan	Abandoned traditional historic houses
Residential use of traditional historic buildings	Low-income local residents & high real estate prices
Awareness of the local residents to protect the traditional houses and the site	High maintenance and restoration costs of traditional historic buildings
Production of traditional products such as house wine and olive oil	Lack of knowledge about the conservation and maintenance of historic buildings
Willingness of the investors to acquire property	Deteriorated idle buildings due to lack of maintenance
Highly entrepreneurial population	Refunctioned historic buildings
	Modern applications inharmonious with the historic texture
	Traffic problem on the high season
	Poor information and service facilities in the village

The most important advantage of Şirince is that the settlement and the surrounding area is designated as a historic site and many structures are registered as historic buildings. Today there are 176 traditional historic buildings registered as cultural asset in

the village. The other important properties of the settlement are; it is close to the main tourist attractions, it is easily accessible and it has cultural tourism components. Besides, the preservation awareness of the local residents has raised about protecting the region and the traditional historic buildings. The out-of-town investors who acquired properties in Şirince also made contribution to this approach.

However, there are also some important weaknesses of the region. One of the most important weaknesses of Şirince which affects the economic sustainability is that agricultural activities has been decreased for the last years and the economy of the village entirely depends on the tourism activities. Nevertheless, the tourism season does not spread throughout the year in the region. Besides, the information and service facilities towards the tourists are still insufficient and there are significant problems related to transportation especially in high tourism season.

The other important weaknesses of Şirince are, a lot of traditional historic building has been renovated and refunctioned since the tourism activities has gained importance, but improper applications and excessive interventions change the existing historic and architectural texture negatively. Also due to the preservation and maintenance of historic buildings is a time consuming and expensive process, some traditional historic buildings are neglected, damaged or even destroyed by the environmental factors.




Although Şirince has a significant number of strengths, the above-mentioned weaknesses of the settlement has to be evaluated according to sustainable construction principles and suggestions should be made to improve them.

Evaluation of Şirince Village According to Sustainable Construction Principles

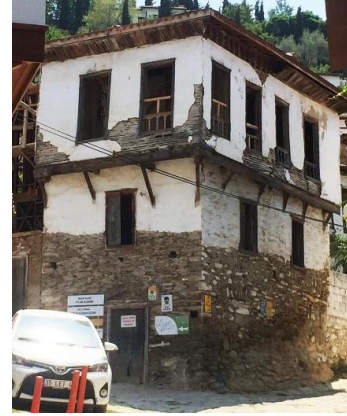
- Social sustainability

There are some problems about social issues which needs to be improved and some suggestions which could positively affect the current properties of the village. The current situation and possible suggestions are given in Table 4.

Table 4. Evaluation of social sustainability properties of Şirince Village

<u>Current situation</u>	<u>Suggestion</u>	<u>Description</u>
<ul style="list-style-type: none"> - Some pavements and roads are neglected and broken, steep slopes makes walking difficult for the user 	<ul style="list-style-type: none"> - A renovation work has to be carried out on the pavements and roads of the village - Elevators, escalators and cable cars can be used in transportation for easy access to the hills of the village (St. Jean and Demetrius Hills) 	 <p>A steep slope in Şirince (Uyar-2004)</p>
<ul style="list-style-type: none"> - The village gets busy with cars and buses in the high tourism season 	<ul style="list-style-type: none"> - Elevated multilevel car parking systems should be used not to increase the land used as parking area - A part of the village center could be pedestrianized - Tour buses could be used for transportation to the tourist attraction points of the village - Scheduled bus services could be offered to the surrounding tourist centers to prevent the increase in the car and bus traffic 	 <p>Roadside parking in the village</p>
<ul style="list-style-type: none"> - Insufficient information and service facilities 	<ul style="list-style-type: none"> - Untidy and worn information and guidance signs should be renewed - Service facilities such as public toilets should be improved - A tourist information center should be designed and built at a specific attraction point 	 <p>Untidy information signs in Şirince</p>

- The relationship of the houses with the urban area is destroyed in some parts of the village
- House-street relationship has to be protected with the help of a proper management plan
- Urban green spaces can be created between the houses and street in order to increase the strength between the house and urban area and to increase the ecological quality of the region



The poor relationship between house and urban area

- Economic sustainability

The economic development of the village could be ensured mainly by preserving the population of the village and by creating ways to encourage a spread of visitors throughout the year. The main problems and possible suggestions are given in Table 5.

Table 5. Evaluation of economic sustainability properties of Şirince Village


<u>Current situation</u>	<u>Suggestion</u>	<u>Description</u>
- Şirince's tourism mainly depends on weekend tourism other than the summer season	<ul style="list-style-type: none"> - Local agricultural products can be offered as an alternative tourism activity, such as wine tourism. Visitation to vineyards, wineries and wine festivals should be offered to spread the tourism throughout the year - Traditional village products could be promoted with food festivals and courses to create a demand to gastronomy tourism 	<p>Alternative tourism facilities</p>

<p>- The prices of the real estate market has been radically increased for the last decade</p>	<p>- Financial affordability has to be ensured by constructing appropriate minimum housing standards (local material and with basic traditional architectural features)</p>	<table border="1"> <thead> <tr> <th>m²</th> <th>Price</th> </tr> </thead> <tbody> <tr> <td>120</td> <td>285.000</td> </tr> <tr> <td>96</td> <td>337.000</td> </tr> <tr> <td>200</td> <td>403.000</td> </tr> <tr> <td>155</td> <td>250.000</td> </tr> <tr> <td>110</td> <td>225.000</td> </tr> </tbody> </table>	m ²	Price	120	285.000	96	337.000	200	403.000	155	250.000	110	225.000
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<p>- In order to increase the awareness in the construction industry the environment-friendly contractors can be promoted</p>	<p>Prices of some real estate in Şirince</p>													
<p>- Soft loans or non-refundable loans has to be created for the local residents of the village</p>														
<p>- Employment creation and labor intensive construction (including traditional building crafts) can be promoted</p>														

- Biophysical sustainability

Biophysical sustainability states that the quality of human life has to be improved by demonstrating a responsible approach while constructing. The problems and suggestions of Şirince can be seen in Table 6.

Table 6. Evaluation of biophysical sustainability properties of Şirince Village

<u>Current</u>	<u>Suggestion</u>	<u>Description</u>
<p>- Some new buildings and restorations have improper details and applications which cause a negative change in the existing historic and architectural texture</p>	<p>- The management plan for preservation has to be put into force as soon as possible</p> <p>- Traditional construction techniques and materials should be used to prevent the elimination of the sense of history in the village</p> <p>- The visual harmony between the structures should be acquired by preserving the historical features of the traditional buildings and by avoiding excessive restorations</p>	 <p>A reinforced concrete building in the village</p>

- Some traditional historic buildings are neglected, damaged or even destroyed by the environmental factors, as the preservation and maintenance of historic buildings is a time consuming and expensive process

- Public, local, civil and private organizations should work together in order to create funds and restore the idle and damaged historic buildings



An abandoned building

- Modern building applications increase the consumption of non-renewable natural sources (energy, water, material)

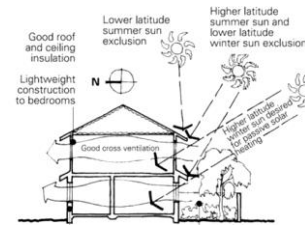
- Materials with low embodied energy has to be used in constructions (traditional and local materials) (URL 2, 2019)

- Reusing and recycling options has to be taken into consideration in constructions
- The use of renewable natural sources such as wood has to be increased



Embodied carbon of some building materials

- The orientation and envelope properties of the structures has to be carefully designed to obtain indoor thermal comfort with minimal energy consumption (heating and cooling)



Natural passive cooling systems



- A passive thermal design (such as the use of breezes for natural cooling, solar warming of building, inclusion of a courtyard for natural ventilation) has to be produced during the design process (M., 2011)
- Existing and planned vegetation can also be used to improve the thermal and lighting comfort of the buildings

- Environmental pollution occurs during the construction of the buildings	- The wastes has to be classified, stored and eliminated properly - Toxic products should be carefully used in constructions (solvent-based finishes, adhesives, VOC, etc.) in order to create a healthy indoor and outdoor environment	Sources of VOCs as building materials; - Paint, varnishes, caulks, adhesives - Carpet, vinyl flooring - Composite wood products - Upholstery and foam
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- Technical sustainability

The problems and suggestions about technical sustainability can be seen in Table 7.

Table 7. Evaluation of technical sustainability properties of Şirince Village

<u>Current situation</u>	<u>Suggestion</u>	<u>Description</u>
- The durability of traditional buildings is getting lower in Şirince	- Traditional techniques and materials should not be abandoned - The use of cement-based materials should be avoided in restorations and construction of new structures - The details (nails etc.) should be cleaned and the damages in traditional buildings should be prevented	 <p>The effect of an awning to the space perception</p>
- The low-density urban areas result with the deterioration of constructions and urban areas	- Mixed-use pedestrian neighborhoods should be created in order to integrate housing and retail spaces and enhance living and leisure environments - Energy efficiency technologies should be increased in traditional buildings in order to decrease the energy consumption	 <p>A pedestrianized street in Alaçatı (Çeşme)</p>

CONCLUSION

Şirince had become a popular tourist attraction point with its location, historical and architectural texture and is influenced by the influx of tourists in the summer season from the early 1990s. Tourism resulted with a significant change in the daily life of the local residents. Due to the village mainly focuses on tourism

activities the entire village became a commercial area and the real estate prices increased a lot. However, the tourism season does not spread throughout the year and the local residents of the settlement are migrating from the village. Besides some modern intervention and applications are not constructed with an ecological and sustainable approach. Therefore the village is facing the risk of losing its cultural heritage features. In order to preserve the sustainability of the region, the migration has to be decreased and the historical and architectural texture of the settlement has to be preserved with some precautions.

In this study, the current situation of Şirince Village was evaluated according to sustainable construction principles. The evaluation is carried out through the strengths and weaknesses of the village according to social, economic, biophysical and technical sustainability principles. According to the evaluation it can be mentioned that although the settlement still preserves its local characteristics to a degree, the settlement has some important problems which needs to be immediately improved. Although these principles offer a multi-stage framework which involve different suggestions it can be mentioned that the main aim of them is to preserve the vernacular architectural tradition of the village. Consequently, the suggestions mainly refer to;

- Human health and social justice should be taken into consideration in construction and urban planning
- The relationship between the buildings and the urban area has to be improved
- Design, construct, maintain and demolish of the buildings has to be made by taking advantage of local materials and resources, adapting to environment and climate, respectful to the nature
- Passive solutions such as a good orientation, suitable positioning of windows, a good envelope design has to be carefully evaluated to decrease the energy demand and reduce the carbon emission of the buildings
- Public, local, civil and private organizations should work together in order to preserve the vernacular architectural tradition of the village and to renovate the idle buildings
- The local agricultural products and traditional village products also has to be improved to decrease migration, ensure the sustainability and to spread the tourism throughout the year
- The awareness of the local residents about the tourism activities has to be increased in order to address more fundamental development goals of the region



Also, the management plan for preservation has to be put into force as soon as possible by taking into consideration the suggested precautions.

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Resume

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