



# Conservation problems of rural architecture: A case study in Gölpaşarı, Anatolia

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## Abstract

Rural areas have generous variety that combines local geographical features, buildings planned according to climatic conditions and the tradition of using local building materials, social relations and habits of the local people in their daily life. The purpose of this study is to determine the rural architectural heritage that is about to disappear; evaluate conservation proposals and developing policies to increase the interest in rural. In this study, the rural architectural heritage and conservation problems of Gölpaşarı and its villages were evaluated as a representative area which has been an important settlement from prehistoric times until today in Central Anatolia. The architectural features have been examined with the settlement characteristics, analyzes, building typologies, construction techniques and materials. Rural areas have conservation problems such as immigration, socio-economic changes, and improper architectural interventions at the settlement and building scale. These problems have been analyzed through Gölpaşarı, which is in danger of losing its original identity with structurally as well as socially. Based on the findings, conservation proposals for the building and settlement scale were interpreted. The cultural, social, economic and tourism potential of the settlement were evaluated to ensure the protection and sustainability. There has not been noteworthy research in this context in Gölpaşarı and its surroundings. This study has potentials to be an example for developing rural heritage management in Anatolia.

**Keywords:** rural architecture, sustainability, conservation, vernacular architecture, preservation.

## 1. Introduction

Rural architecture involves the structures and environment built by the settled societies in rural areas. A rural area has three-component composed of lands where agricultural activities are carried out natural environment and human settlement (Gy Ruda, 1998, 93). The European Charter for Rural Areas refers to non-urban and natural areas that are part of agriculture, forestry, aquaculture, including small towns and villages in or on the shores (EUCFR, 1996). TÜİK's (Turkish Statistic Institute) definition of a rural area that; all settlements other than provincial, district centers are considered villages according to administrative status besides that, a population of less than 20,000 according to the population criteria as in the Village Act (UKKS, 2014, 3).

Rural architecture is a social representation that connects cultural beliefs and values (Bronners, 2005, 23-24; Lawrence, 2005, 110). ICOMOS' "Charter on Built Vernacular Heritage" was published in 1999. With this international charter, vernacular heritage, traditional structures, the principles

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for their conservation and application methods were explained. The traditional buildings in rural areas have different characteristics because of local materials, economic opportunities, climate, and social life (ICOMOS, 1999). Besides that the buildings are produced by traditions according to the relationship between environmental contexts, special needs, housing values, life culture, and available resources (Oliver, 1997; 2006). Factors such as the local material, the topography of the area, the shelter area to be created, and the spaces to be opened in the building depending on the wind direction affect the architecture (Donovan & Gkartzios, 2014, 340). Local building materials vary due to the geographical features of each region and are preferred with their quick availability and economy. Local construction traditions reflect local identity of the region (ICOMOS-Turkey, 2013; ICOMOS Turkey Architectural Heritage Conservation Charter). The lifestyle of local people and their socio-economic structure also affect the rural architecture with interior arrangement and the size of the houses.

Rural architectural heritage has been lost day by day due to migration, globalization, changing economic and social policies. Recently, migration from rural to urban has increased with the decrease in agriculture and animal husbandry, job opportunities in cities. With the industrialization the urban population increased and rural areas lost their popularity (Ballantyne & Ince, 2010, 2). The migration affects the production and social system in the producer market as well as the consumption market by changing their place (Tekeli, 1975, 153). The abandonment problem has emerged in rural settlements where economic activities do not continue.

In Turkey, after the 1990s, agriculture was separated from the soil; rural life has changed with the change in the quality of agricultural production in rural areas, the decrease in agricultural employment and the development of non-agricultural activities and industrialization (Öğdül, 2019, 41). In recent years, migration from rural areas to cities has increased, the cities have become attractive because of the job opportunities and socio-economic life.

The population in rural areas of Turkey is 75.8% in 1927, but today it is 7.7% (Suiçmez, 2019, 59). The concepts of "urban" and "rural" lose their meaning beyond their morphological appearance. It is important in terms of theoretical, political, cultural, financial, density, access to services, the age distribution of the population, and demographic changes (Lacour & Puissant, 2005, 729). Local building traditions are threatened economically, culturally and architecturally (ICOMOS, 1999, 1).

Traditional architecture has been neglected with the evacuation of the settlements in rural areas. With the loss and demolition of abandoned buildings, new structures, which have no historical and aesthetic value and are different from the region's architecture with material and construction systems, have been built. However, it is seen that unconscious interventions are made in the traditional buildings with the change of today's living conditions in rural and they lost their architectural identities. Because of the economic conditions, local people could not repair their houses. Thus, it cannot ensure the sustainability of rural architecture.

On the other hand, migration from the rural to urban causes push–pull factors of sophisticated urban living and fragile job opportunities (Oliver, 2006). Important changes occur in cities such as standardization of behaviors, needs and requirements dependent on globalization, access to services, and new paradigmatic combinations. The silhouette of cities changes, demographic trends emerge in rural areas, identity is lost and new identity formation occurs (Lacour, Puissant, 2005, 729, 736). It is the main problem of governments, planners, architects, conservationists and experts of different disciplines against globalization (ICOMOS, 1999, 1).

There are many local and regional initiatives from different disciplines for the sustainability, quality and protection of rural areas. There is an urgent need to develop managerial initiatives to ensure the protection. This situation is directly related to life and environmental quality, food production, cultural heritage, local and traditional knowledge, sustainable development. However, UNESCO, FAO, ICOMOS, IFLA, ITKI are working to urgently improve the quality of the rural landscape for this purpose (ISCC, 2013).

This study was carried out in the Gölpazarı district of Bilecik and its villages, which has been an important settlement since prehistoric times. The aim of the study is that the settlement has serious immigration problem; even though it has fertile agricultural lands and products, there is an economic livelihood problem so, the rural architectural heritage is in danger of being lost. Field analysis was carried out on its state of preservation and building density with numerical and photographic documentation. Architectural studies outcomes and regional values of the region were evaluated together, conservation problems had identified, proposals and strategies concerning the problems related to the conservation of architectural heritage were presented.

## 2. Materials and Methods

### 2.1. Study Area

Bilecik's Gölpazarı settlement was chosen as the study area, because of its historical past like many settlements in Anatolia, and preserving the character of the settlement. Bilecik is located in the southeast of the Marmara region in Turkey (Figure 1). Bilecik's Gölpazarı district was established in the north of the Göl Plain, has been an important settlement from prehistoric times. Karaağaç Tumulus, Yassı and Arıcaklar Tumulus in the district convert the traces of the Hittite, Phrygian and Lydian civilizations belonging to the Chalcolithic period. This region has been the settlement of the Bithynia Empire since the 3rd century B.C. (Tuğlacı, 1985, 54; Sevin, 2007). In Bilecik, there were Belakoma, Agrilium, Lamounia, Thebasion / Sevasion, Armenocastron, Lake-Flanos settlements of the Bithynia Empire. The center of Bilecik was called Belakoma, and in this region, between the Hamsu and Debbaghane Streams, there was a castle, of which only the foundation remains have survived (Darkot, 1986, 611). The Byzantine Empire had dominated this region since the 4th century AD. (Özler, 1967, 28).

After the 1071 Malazgirt War, Bilecik entered the borders of the Seljuk Empire (Tuğlacı, 1985, 54). The Ottoman Principality came from Central Asia in the 13th century and settled in Bilecik's Söğüt district and its surroundings. During this period, Osman Bey took the Harmankaya Landlords in the Gölpazarı region of Bilecik from the Byzantine Empire and started to grow the Ottoman Empire in these lands (Başkaya, 2006, 6). He declared his principality by taking Bilecik in 1299, then Yarhisar and İnegöl (Gökbilgin, 1997).

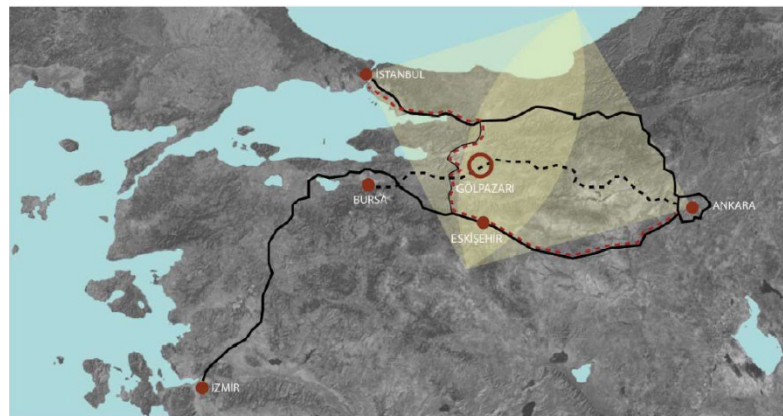


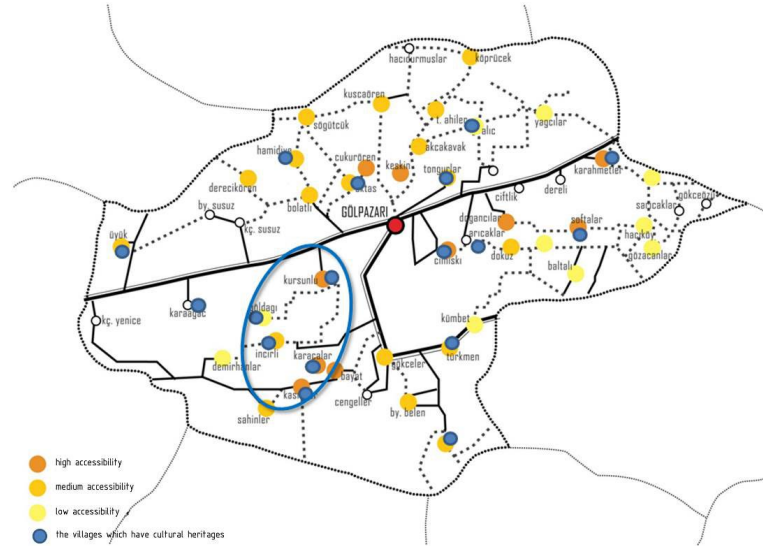
Figure 1 Geographic location of Gölpazarı (Keep Your Village Alive Project)

In the 14th and 16th centuries, Gölpazarı became the most developed township, and the excess of agricultural activity was noteworthy. Its population increased continuously until the 16th century (Turğut, 2015, 188). In this century, the township was a winter quarter and had become an important marketplace where market taxes (bâc-ı bazar) were taken, and Gölpazarı had the highest income compared to other towns of Bilecik (Turğut, 2015, 341). The district became important because it was on the Baghdad Road in the 16th century, and it was the gateway of the Marmara Region to Anatolia.

## 2.2. Data Collection

The data was produced from field analysis and surveys between summer period of 2013 and 2019. In this long-term study, 48 villages in the district were analyzed with agriculture, husbandry, climatic conditions, architectural, archaeological, and natural heritage (Figure 2). The population of the region, age distribution, living conditions of the indigenous people, livelihoods, utilization of environmental resources, and living habits were examined.

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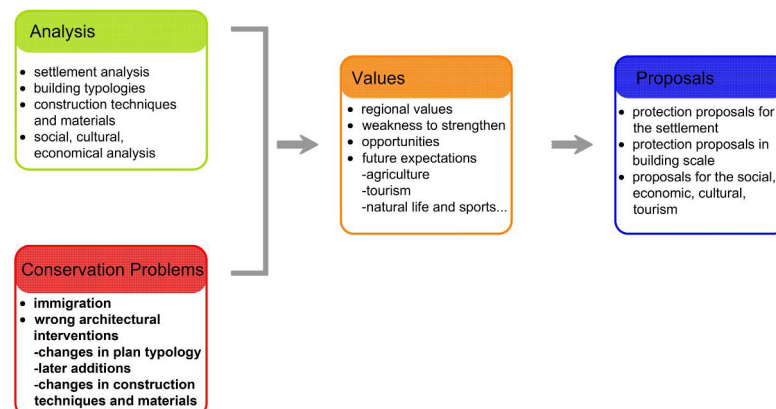


**Figure 2** The villages of Gölpazarı (illustration arranged by Keep Your Village Alive Project, Past to Future Exhibition, 2015.)

This study, which has been ongoing since 2013 and known as the "Keep Your Village Alive" project in the academic platform, has many products. The project continued with restoration and repair works, social and cultural events, exhibitions, symposiums, and rural sustainability workshops in the region. The data obtained from all these studies have been archived under architectural, social, and ecology titles. This paper aims to present the conservation problem of the architectural heritage of Gölpazarı by examining the building typology and the changing built environment.

## 2.3. Methodology

As mentioned in the Burra Charter; the area was defined, its rural analyses were prepared, the data collected to identify the traditional building typologies, material and construction techniques. In the second stage, the conservation problems of the region were determined. In the third stage, the opportunities were evaluated, and suggestions were made regarding the architectural, cultural, tourism, and economic potential of the region (Figure 3).



**Figure 3** Settlement input and output analyses diagram (illustration: authors)



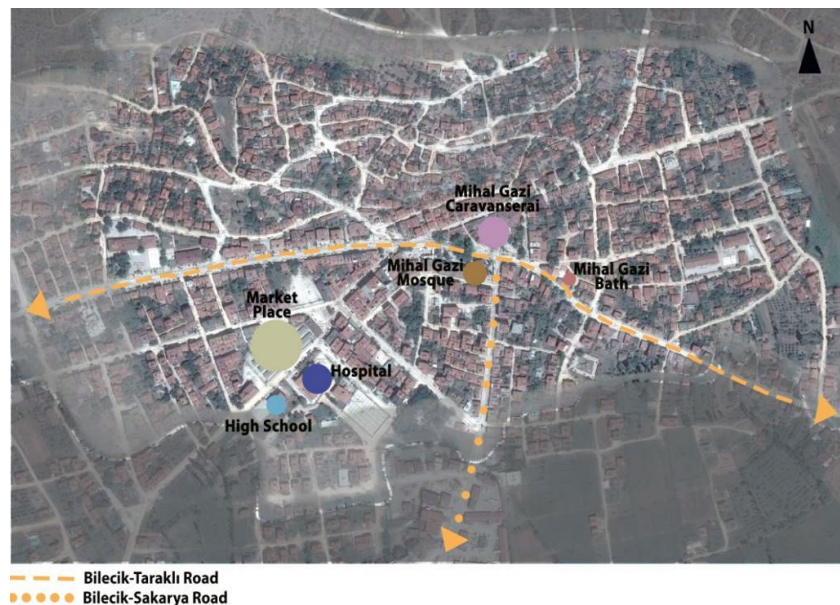
The analyses in this study are concerned with the determination of the original values of village houses and the relations with local materials. Qualitative research methods were utilized with field surveys. During the fieldworks (2013-2019), settlement analysis (occupancy, preservation status, building usage, construction systems), building typologies (plan typology, facade features), construction techniques and materials were investigated for architectural documentation.

Conservation problems have also been identified with settlement analyzes. Despite the problems such as migration and abandonment encountered in many similar settlements in Anatolia, architectural, social, economic, and cultural opportunities were evaluated for the conservation and sustainability of the settlement.

### 3. Results And Evaluations

#### 3.1. Historical and Traditional Rural Fabric

The settlement has an active transportation network between Bilecik, Sakarya, and Bolu cities. Trade and transportation axes form the nodal point in the district center; Mihal Gazi Caravanserai (Figure 5a), Mihal Gazi Mosque, Turkish bath, and Zincirlikuyu are important monumental buildings at this point, dating back to the 1400s. These structures are the focal point of the district and the streets in organic form converge at the center (Figure 4). The Kasımlar Mosque (Figure 5b) dated to the end of the 17th century in Kasımlar Village, the Byzantine bath, and church ruins in Bolatlı Village are important monumental values. There are many archeological ruins, tumulus and architectural structures in the villages of Gölpaazarı (Figure 2).



**Figure 4** Main transportation axes and important structures of Gölpaazarı district (illustration: authors).

In the settlement analyzes of the district and its villages, the functions of the buildings, the number of floors, their preservation status, construction techniques, and registration status were inventoried and summarized in Table 1. It is seen that the growth in the district was planned regionally. Each village was clustered within itself and was connected to the district by a road. It has been determined by the occupancy analysis that the construction is about 35-40% ratio in the villages and 65% in the district. It is noteworthy that this ratio reaches 85% around the main roads, and the parcels on the main roads and fully used (Figures 2 and 4). The buildings were arranged with gardens, and the houses have entrance from the streets (Figures 6 and 7).

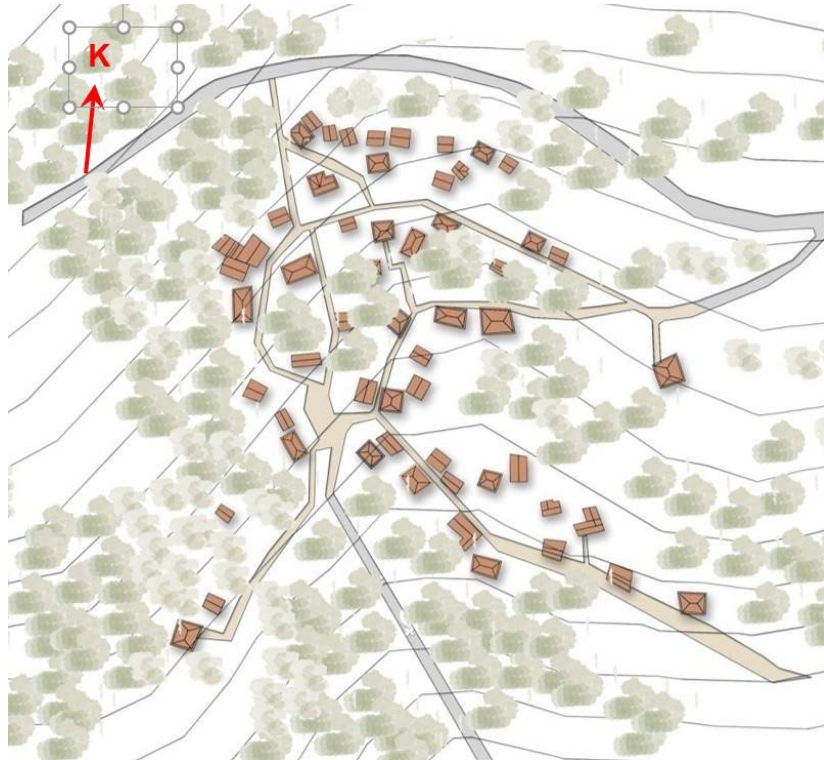


**Figure 5a** Mihal Gazi Caravanserai 15 th century (photo:authors); **b** Kasımlar Mosque-17th century (photo:H.Yıldız).

The rural architecture in the villages consists of one or two-story houses, one-story barns, warehouses, and hayloft structures (Figure 6). In the district there are new constructions with the reinforced concrete system together with traditional structures. The traditional buildings were limited to a maximum of three floors, and the ratio of these three-story buildings (including built with the reinforced concrete system) to the number of whole buildings in the district center is 9% (Table 1).



**Figure 6 a** Büyükbelen Village; **b** Keskin Village (photo:authors).



**Figure 7** Kasımlar Village site plan (Keep Your Village Alive Project).

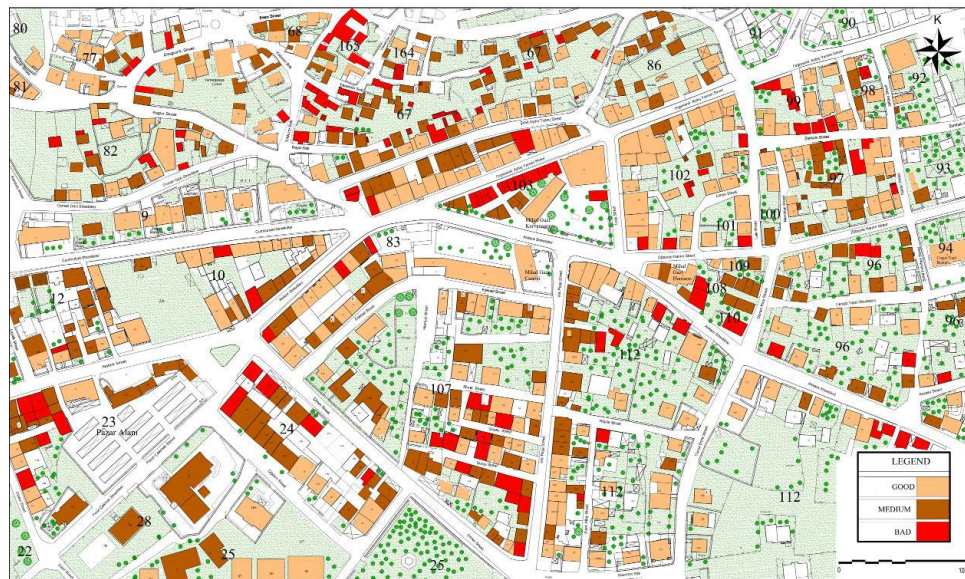


In order to the needs of the villages, there are also commercial, healthcare and educational buildings in the district (Figure 4). The traditional construction techniques of the settlement are the adobe and wooden frame system. Structures built with traditional systems have been preserved in the villages, but the ratio of reinforced concrete structures to the general number of buildings in the district center is quite high (58%). However, the damage conditions of the traditional buildings are medium and bad (Figure 8). The ratio of the buildings with high damage in the district is 17% and most of them are abandoned. While some of the buildings with moderate damage are used periodically, the local people try to keep their structures alive with minor repairs.

**Table 1** Numerical data showing the settlement analysis of Gölpaazarı villages

Villages	Preservation status			Building usage			Number of floors				Construction system				
	Good	Moderate	Bad	Permanent	Seasonal	Vacant	1 storey	2 storey	3 storey	4+ storey	Adobe	Masonry (adobe)	Wooden Frame	Reinforced concrete	Mixed structure
District center	46%	37%	17%	81%	9%	10%	29%	47%	15%	9%	21%	18%	3%	58%	2%
Akçakavak	63%	31%	6%	78%	12%	10%	38%	59%	3%	-	76%	21%	-	3%	-
Aktaş-Beşevler	74%	18%	8%	81%	5%	14%	31%	69%	-	-	53%	48%	-	5%	-
Arıcaklar	61%	28%	11%	66%	13%	21%	23%	77%	-	-	81%	17%	2%	-	-
Armutçuk	78%	25%	3%	46%	12%	42%	27%	69%	4%	-	76%	21%	-	5%	-
Büyükbelen	53%	42%	5%	71%	16%	13%	24%	66%	-	-	82%	17%	-	1%	-
Göldağı	42%	33%	25%	36%	40%	34%	44%	54%	2%	-	74%	26%	-	-	-
Kasımlar	51%	24%	25%	63%	14%	23%	32%	78%	-	-	84%	16%	-	-	-
Keskin	52%	37%	11%	52%	37%	11%	16%	82%	-	-	86%	14%	-	-	-
Kurşunlu	75%	18%	7%	73%	18%	9%	18%	78%	4%	-	62%	34%	-	4%	-
Tongurlar	44%	41%	15%	44%	22%	34%	23%	76%	1%	-	77%	19%	4%	-	-

It is seen that the number of abandoned structures in villages has reached 40% in some villages. The buildings forming rural architectural heritage that could not be preserved by remaining in an abandoned state reached 40-50 percentage (Table 1).



**Figure 8** Gölpaazarı district damage analyzes (authors).

### 3.2. Vernacular Gölpazarı Houses

Gölpazarı has monumental buildings belonging to the early Ottoman Period as well as important pavillions dated to the last period of the empire. Kadioğlu Pavillion is known as a historical place belonging to the late Ottoman period and where the Kadi (Muslim judge) of this period lived, but today it is abandoned (Figure 9). It was observed that the houses examined in the region were built in the plan type with inner and corner/edge sofa according to the Turkish house plan tradition (Figure 10). The sofa is a space that meets many functions required by daily life such as eating, cooking, resting, sitting, and welcoming guests (Kâhya et al., 2018). In the plan type with an inner sofa, rooms are lined up on both sides of the sofa. In some types, it has been expanded by adding a stair or a side sofa (Eldem, 1954). The corner sofa plan is the type with the sofa in the corner and surrounded by rooms on two sides and other sides open to outside with windows or an entrance gate. The plan type with side sofa was encountered before the 19th century in Anatolia. Inner and central sofa plan types became widespread in the 19th century as vertical and transverse symmetrical (Günay, 1999, 62).



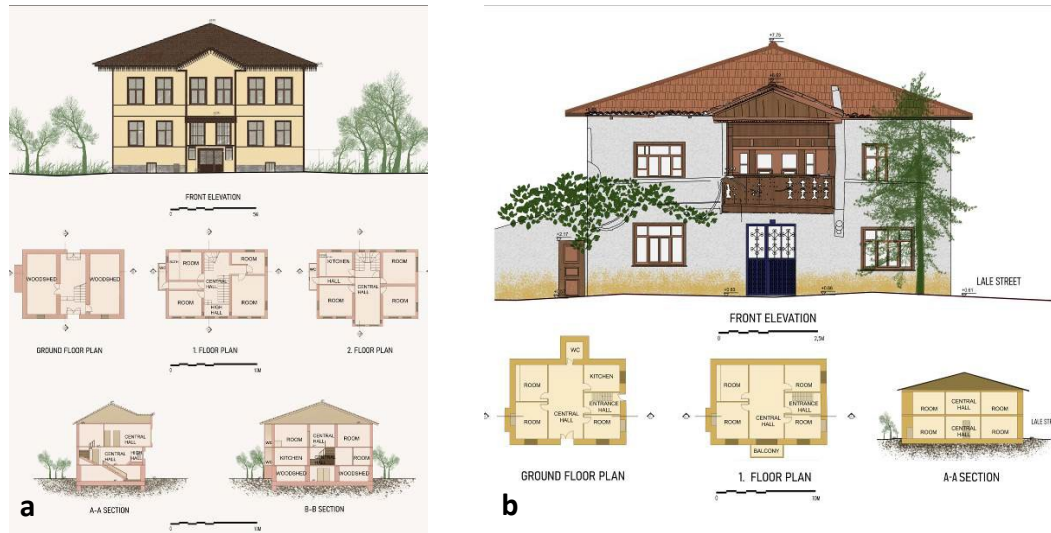
Figure 9 Kadioğlu Pavilion survey drawing and 2019 photo (authors).

#### 3.2.1. Plan typology

It has been observed that the plan typology of the pavilion buildings in the region and the traditional residential buildings are similar. The inner sofa type was widely used in rectangular planned houses and the plan layout has not been changed. Besides that, the original scheme of the square planned type has been disrupted with the new spaces added to the halls depending on today's needs due to the narrow interior spaces. The central sofas divide the long side of the building into two symmetrical parts and the rooms open to the sofas. This type of sofa is rectangular and extends along the front and rear facades of the buildings; its width is approximately 260-320 m. and narrower than the rooms. The main entrance doors open to the sofas from the front facades, in some buildings, the sofas are also accessible to the back garden (Figure 10a).

In the buildings which ground floors were planned as barn or woodsheds, the entrances to the first floor, where living spaces located, were generally arranged separately with stairs from the outside or by a single-arm interior staircase from the woodshed floors. The stairs on the living floors appear as "U" or "L" planned. The areas under the stairs were usually closed and used as closets. On the first-floor sofas of some buildings, "high sofa" was designed as a special sitting area, which can be reached with a few steps (Figure 10a). In some houses, corner rooms were arranged as "head rooms" and customized with architectural details and decorations.





**Figure 10** a A pavilion with inner sofa; b. A house with inner sofa (illustration: authors).

In some house plans, the wet areas were generally carried outside the buildings due to their architectural and plumbing arrangement (Figure 10b). In the buildings with less intervention, "gusülhane" and wooden cupboards have been preserved in the back rooms.

In the region, the plan type with a corner sofa is generally seen in square planned structures. Since these structures have narrow interiors, sofas have been converted into rooms or kitchen spaces and have become imperceptible (Figure 18).

### 3.2.2. Facade Features

It is noteworthy that all of the traditional buildings have a characteristic facade arrangement in the region, although their functions are different (residential or residential and commercial). The front facades of the houses have more specific feature with their symmetric layout and projections. The main entrance door was located in the middle and the windows were arranged symmetrically to the door on the façade. The central projections on the entrance doors emphasize the symmetry of the facade and the plan type of the inner sofa (Figures 8, 9 and 11). In houses with barn or woodshed on the ground floors, these facades are deaf and have narrow windows, while the layout changes on the upper floors (Figures 8, 9a and 10). Thus, the functions of the floors are perceived from the facade. The facades were generally undecorated and plastered; however, wooden floor beams, vertical posts on the corners were left exposed (Figures 9a and 11).

Projections are common architectural elements on the frontage as a balcony or alcove (Figures 8, 9 and 11). In some houses the top of the projections were arranged to form a triangular pediment (Figures 8 and 9). They were plastered or wooden covered; however, it is highlighted by a wooden floor cornice. The side facades of the projection with little depth not have windows or there are narrow windows.



**Figure 11** A house in Tongurlar Village



**Figure 12** A house in Kurşunlu Village (photos: authors).

In the region where the terrestrial climate is effective, the facades of the buildings were plastered with adobe plaster to protect against climatic conditions. Since the adobe is a material that is not resistant to external weather conditions, the facades and covers of the buildings must be well protected. For this reason, the eaves were extended outwards, and the structures were generally covered with hipped roofs (Figures 10 and 11).

In the district, the buildings where the lower floors were arranged as shops and the upper floors as residences, the vertical axes of the showcases in the shops and the windows in the living floors were arranged in harmony with each other. The residential floors were separated from the shops on the ground floor by a projection or a floor cornice by their function and design.

While the building facades have symmetry and order in themselves, it is another important architectural feature that the structures in the neighboring parcels were also designed in harmony. In adjacent structures with the same number of floors, a building cornice continued to the side building, and they were covered with a single roof cover. As it can be seen in Figure 13, when a two-story building was built next to a single-story building, the eave cornice of the existing building and the floor cornice of the two-story building were arranged in harmony. The roofs were planned together and arranged with gable roofs.



**Figure 13** Facade arrangement in adjacent buildings (photo: authors).

Not only in eaves and cornice arrangements; it is remarkable that the buildings in the neighboring parcels continue the facade features of each other, have a similar gauge, occupancy-space, and symmetrical window arrangements. This feature shows that harmony in the settlement texture. Living, producing, and sharing in Anatolia are well-known traditions from past to present; seeing the traces of the tradition in architectural features is magnificent.

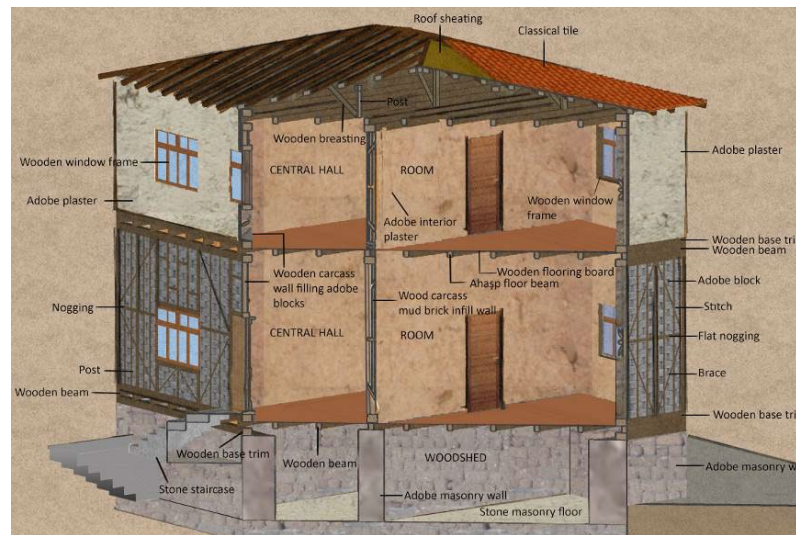
### *3.3. Construction Techniques and Building Materials*

The construction with local materials is one of the most important factor for creating the identity of the vernacular architecture (Afshar et al., 2012, 103). The structures in the region were built on a stone masonry foundation wall. In some buildings, the stone masonry was raised up to the plinth level in order to protect the building against the water rising from the ground with capillary (Figures 12 and 13). The building materials commonly used in the region are adobe and wood so the construction systems were formed according to local materials (Table 1). Adobe is made of organic materials such as earth, clay, and straw. Adobe brick (also called mudbrick) was made with humid sandy soil and dried in the sun (Costa, 2018).



The system formed by filling rubble stone, brick, or adobe block into the wooden frame is called the wooden frame with masonry infill or "hımsı" technique. Another construction system is seen in the settlement is adobe masonry. In this system, adobe blocks bonded in an alternate order side by side and on top of each other, and mud mortar was used between the blocks. In both systems the inner and outer walls of the buildings were generally plastered.

In Gölpazarı the most common construction system is "hımsı" with adobe blocks. The main wooden pillars extended to the level of the floor slab and were supported by the head beam. Wooden lintels were used to prevent the props from bending against the vertical load. The adobe blocks were placed between the wooden elements in horizontal and diagonal form. The wall and floor beams were planned together in the wooden frame system. The door and window openings in the buildings were also arranged with wooden pillars, upper and lower braces. The locations of the main pillars and diagonals were determined according to the openings (Figure 14). The projections and balconies were extended outwards with wooden floor beams and supported by wooden buttresses. A frontal board covers only the wooden beams on the projections or continues along the entire facade (Figure 10); the construction systems were left open under the projections (Figures 11 and 13).



**Figure 14** "Hımsı" construction technique and building formation (illustration: authors).

The warehouse or barn structures were built with adobe masonry system and the interior walls were not plastered. The dimensions of the adobe blocks are differed; it is seen that the blocks were cast into molds of different sizes. Some houses also built in this system with two or three floors; the adobe walls were connected with wooden beams (Figure 15a). The wooden pillars were used at the corners of the building to strengthen the system (Figure 15b).



**Figure 15** A Wooden beams and adobe blocks b Structure details in adobe system (photos: authors).



The wooden frame system was applied in a smaller number of buildings in the study area (Table 1). It was formed with wooden pillars and braces similar to the wooden frame and filling system, and no filling material was used. To cover the frame system and to apply the plaster to the surface, "bagdadi" laths were fixed on the woods at regular intervals (2-3 cm). There are also mixed-system structures in the region where several systems were used together.

The adobe render applied as a surface coating to protect the system against climatic conditions. The clay in the plaster has advantageous water resistance as well as its nature (Figure 14). All roofs, which were arranged as hipped or gable roofs were covered with tiles do not have a rain drainage system, and the wooden elements used on the roof were not planed, but simply trimmed (Figures 10 and 13).

Material characterization experiments were conducted to determine the properties of the adobe used in the region. Physical, chemical and mechanical analyzes were carried out on samples taken from adobe blocks, interior, and exterior plasters. Adobe is an ecological building material created with a mixture of fibrous soil, water and straw. It was determined that there was 56-60% binder (clay), 30-39% aggregate (sand), and 6-10% fiber (straw) in the plaster samples. In the adobe blocks samples the straw was not used or it is present at 1%, the aggregate ratio is 17-28%, and the amount of binder is higher than that in plasters. Compressive strength tests performed on adobe blocks gave results of 0.65-0.9 MPa (Arpacioğlu et al., 2015).

#### 4. Conservation Problems and Threats

Conservation is frequently seen as a technological problem because of the preservation of old materials, the keeping of venerable buildings in good repair, but conservation is a cultural problem fundamentally (Oliver, 2006). Protection and sustainability problems due to different factors have been identified in the settlement.

##### 4.1. Immigration

The main livelihood of the Gölpazarı is farming; however, due to the lack of job opportunities in the district, local people migrate to cities. According to the data of the Turkey Statistical Institute, the rural population in Bilecik has decreased from 75% to 25% by the year 1985. While there was a slight increase in population in the center of the district in 1985-2000, the population in rural areas decreased (Başkaya, 2006).

With the establishment of the Gendarmerie Training Command in the district in 2001, economic activity started. The bazaar area became active and commercial activities developed with the military shopping from local people; facilities to meet the needs were opened, and 3 hotels and pensions were established for the accommodation of those visiting the military (URL 1). The young population, who migrated, returned due to these economic developments and the population started to increase as of 2000. However, with the closure of the command in 2013, the economy returned to its previous state, and the settlement, which gave up hope from agriculture, started to emigrate rapidly again. The newly established structures were evacuated; the facilities have remained in a dilapidated state due to long disuse.

Rural settlements remain unclaimed due to migration and as a result loss of rural heritage and natural life, rural landscape and traditional life. In Gölpazarı district, 9% of the buildings have been abandoned, 10% have used for seasonal purposes. However, it has been documented that these structures are not used for a long time in the summer and fall periods. In the villages, these rates reach 30-40% (Table 1).

When buildings which have traditional construction system are left and unattended, the damage caused by the climate and external conditions cannot be followed. If not intervened in time, the extent of the damage increases and these structures are about to collapse (Figure 16). It is observed that the mudbrick plaster has been poured into the buildings that had been neglected and not

intervened in the settlement; the wooden frame is exposed to climatic conditions, and the damage progresses in the construction system and undergoes severe structural deformations.



**Figure 16** An abandoned village house (photo:authors)

It has been seen in the architectural analysis that 17% of the buildings in the district and 20-35% in the villages were damaged and are about to be lost. Since most of the buildings in moderately damaged condition are abandoned, their damage is increasing day by day, and the ones were planned to be demolished deliberately because they are in danger of occupation.

#### *4.2. Changes in Settlement Scale*

With the abandonment of the rural areas, the parcels where the demolished buildings are seen as empty land. In many regions of Anatolia, master plan arrangements in rural areas have not been completed yet and there is unconsciousness regarding the identity and traditional layers of the rural settlement. For these reasons, reinforced concrete structures are increasing gradually and even multi-story structures have started to be built over time.

The increasing number of multi-stories reinforced concrete structures in the settlement almost overwhelm the traditional low-rise buildings (Table 1 and Figure 17). The facade order and harmony of the traditional houses were not even considered as a planning decision in new buildings; window and balcony forms that do not match the original architectural texture. Moreover, each floor was arranged with different window proportions on multi-story buildings. These structures disrupt the architectural identity of the settlement with their completely different appearance and construction systems (Figure 17).



**Figure 17** A multi-story building next to the house built in hıms technique (photo:authors)

There are also deficiencies in the conservation and use of monumental buildings and the preservation of archaeological sites. There are mounds belonging to prehistoric periods along with the traditional houses in Arıcaklar, Kurşunlu, and Üyük villages. Archaeological studies have not yet been carried out and planned in these areas.

Rural areas that are close to cities are also preferred for rural tourism and weekend holidays due to their easy accessibility. However, air, water and soil pollution increased, the density and unconscious interventions caused by the citizens in these areas also cause losses (Kachniewska, 2015, 513).

#### 4.3. Wrong Architectural Interventions Done at Building Scale

With the change in living conditions and the use of modern building materials in building construction, wrong architectural interventions have been made in traditional houses (Baca et al., 2018, 202). Buildings have been adjusted in form and detail until they satisfied the demands placed upon them (Oliver, 2006).

##### 4.3.1. Changes Made in Plan Typology

With the changing living conditions, people want to live in comfortable homes and large spaces. Therefore, the owners of the houses unite the two rooms by removing the walls or build partition walls in the sofa spaces to have an additional room. In some houses, the ground and first floors were used for different purposes or different users; rearranged the spaces, and wet areas were added to the floors; thus, the plan has become incomprehensible, and sofas have lost their characteristics (Figure 18). These interventions not only change the plan typology of the buildings but also affect the structure. The room walls of the original structure of the building are not only dividing walls but also a part of the construction system as being bearing walls. With the removal of these walls, the structural balance of the building is also disrupted.



**Figure 18** The house with an edge sofa whose plan scheme was changed with the additions (illustration: authors).

##### 4.3.2. Additions to the Buildings

The modern building materials are preferred in the repairs of traditional buildings because of their rapid availability and the insufficient recognition of conventional building materials. The traditional roof cover in the region is pantile, but during roof renovations, they partially or completely replaced with Marseille tile. In houses, it is common for the owners to renew their window joinery with PVC and entrance doors with iron doors. With the use of PVC joinery in buildings, the facade feature of the building changes completely. Depending on the needs, the window joineries were renewed partly, and then all were replaced (Figure 19).





**Figure 19** PVC joinery and iron door renovation in houses

The sustainability of the adobe is difficult, which is the common construction technique of the region, so repairs were carried out with cement-based materials in plasters and masonry walls. Compounds in cement are not compatible with the original building material. Also, due to its rigid structure prevents the building from breathing; thus, dispersions occur in the building material (Figure 20).

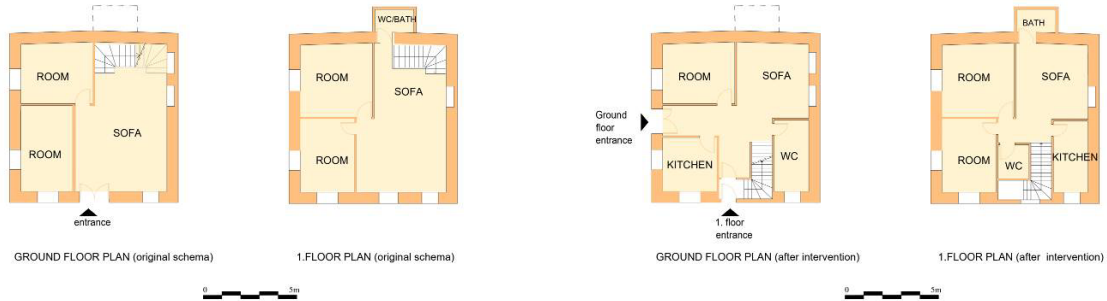


**Figure 20** Cementitious repair on the masonry wall and rendering (Keep Your Village Alive Project).

#### *4.3.3. Interventions Based on Building Comfort Conditions*

It is seen that many interventions are also related with thermal comfort conditions. There is no thermal insulation material in the roof and wall systems of the buildings with adobe masonry or wooden frame system, and the original wooden joineries of the buildings are single glazed. In the region with a terrestrial climate, heat loss in buildings increases with the effect of the winter season and wind. Single rooms in rural areas heated by a galley and the difficulty of supplying hot water in wet areas do not meet today's living conditions. House owners prefer PVC joinery when renovating their wooden joinery due to their heat and sound comfort. Along with the comfort conditions, this solution is fast and economical.

Another comfort problem in buildings is that residents want to rearrange their wet spaces. Depending on the number of families living in the residences and privacy, it is preferred to use each floor separately. In this case, the toilets and kitchens on the floors have expanded with the deterioration of the plan typology and interventions have made with modern building materials (Figure 21). Original "gusülhane" and kitchen niches remain dysfunctional or even removed.



**Figure 21** A house plan before and after the intervention (illustration: authors).

#### 4.3.4. Conservation Problems Related to Materials and Construction Techniques

Adobe is a soil-based material, affected by rainwater and temperature differences so should be maintained regularly; but local people often view repair works as a burden and do not want to be involved. The damages that start as the loss of plaster in the buildings and progress towards the construction system of the building (Figure 22). Immediate interventions are important to prevent the damages to reach advanced levels.

In many buildings in the study area, the adobe material was not repaired by traditional methods, it was intervened quickly and indiscriminately with different materials. Especially the number of buildings that are severely affected by the water coming from the ground with capillarity is in majority. In this case, the water penetrating causes faster structural damage in the masonry system and wooden frame. Irreversible losses occur in the buildings, especially in abandoned, since the type and progression of the damage cannot be determined. There are many buildings in the villages with damaged and collapsed roofs. Due to the loss of plaster on the facades because of the wind, temperature differences or humidity, the building remains open to external weather conditions. The filling mortar between the adobe blocks has lost and the blocks are deformed.

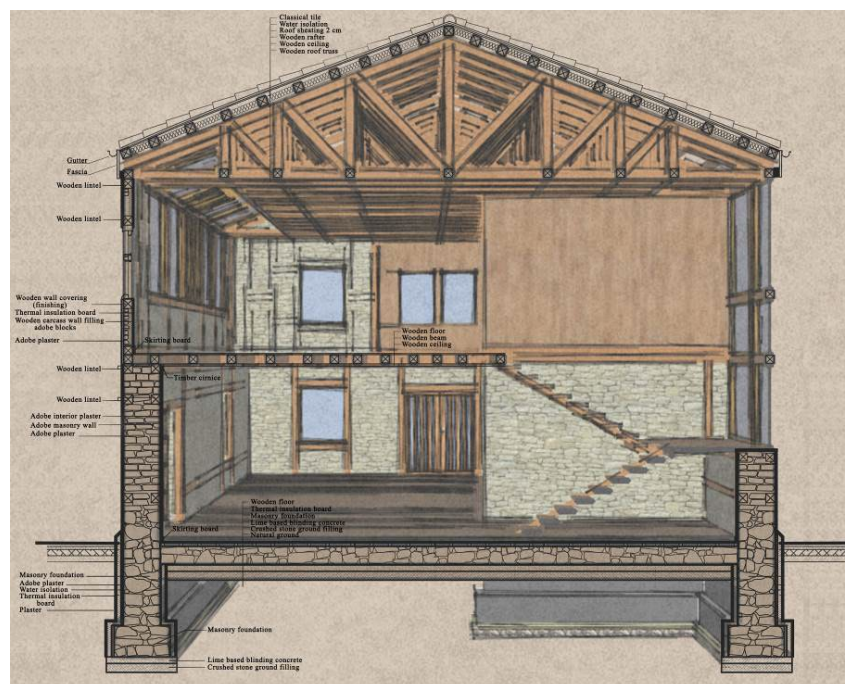


**Figure 22** Damages in the buildings



Conservation and maintenance of rural architecture is essential both on a building and an environmental scale (ICOMOS, 1999). As a result of unconscious interventions, new constructions, and losses in abandoned buildings in rural areas, the original texture deteriorates. We can ensure the maintenance of the buildings by providing solutions depending on the current needs of the users, as well as the development of policies that will ensure the sustainability of agricultural and animal resources in rural areas, the evaluation of rural tourism potentials, and the commitment of people to these areas by preventing migration.

- Adobe is the predominant construction material of Gölpazarı and ecological, but also is highly affected by climatic conditions. It is possible to ensure the sustainability of the material with regular maintenance. So that the damages that start on the outer facade of the buildings do not progress to the construction system, if necessary, repair is made.
- Some of the users may have negative perspectives on the necessity and cost of these maintenance periods. Therefore, studies have been carried out for improved adobe production (Arpacioğlu et al., 2015). It is recommended to use appropriate additives for the material to be long lasting and to provide comfort conditions for the user.
- Prevent the rainwater by making a water isolation on roofs.
- It is important to repair the traditional roof covers in the settlement with the same material to preserve the originality of the building.
- Heat loss could be reduced by applying thermal insulation board between rafters or on ceiling boards during roof repairs (Figure 23). In buildings with wooden frame and lathed wall systems, energy efficiency on the building walls could be increased by placing suitable thermal insulation material (e.g., extruded, expanded polystyrene, rock wool foam...) inside the frame for comfort condition.



**Figure 23** System section proposal that can be used in buildings to be restored (illustration: authors).

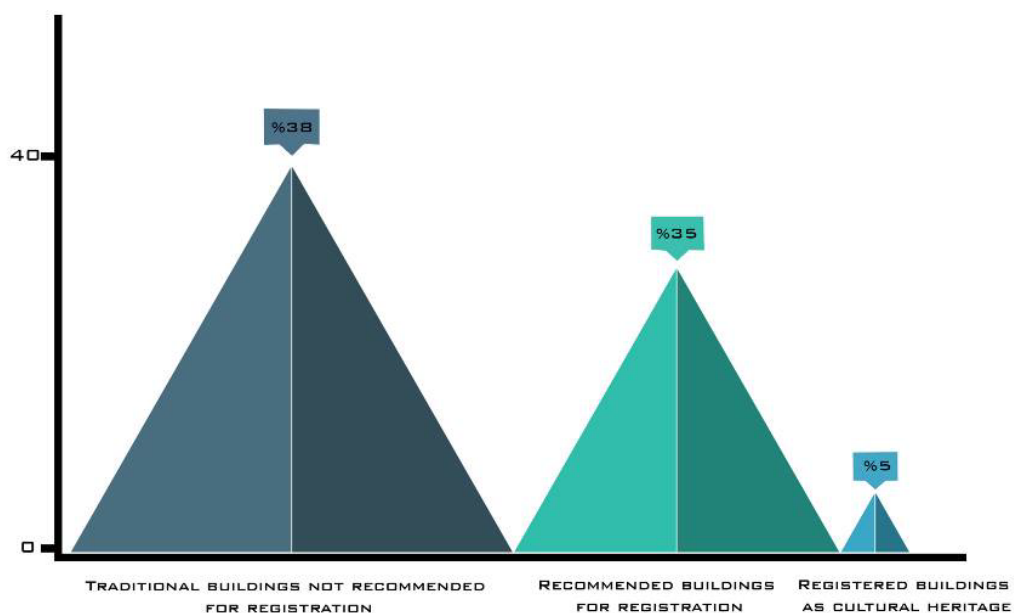


- The facade transparency rate in the traditional buildings has been determined between 35% and 45% in the settlement, and the house owners stated that they were satisfied with the sunshine in their houses. Therefore, original wooden joineries could be redesigned with double-glazing, and thermal comfort conditions could be improved (Figure 23).
- Applying restoration and reuse processes that are friendly with the environment (Baca et al., 2018, 2024). Adobe is a recyclable and natural material, this should be considered as a sustainable and economic advantage. New adobe materials could be produced by reusing the mudbrick soil by the construction residues of the collapsed adobe structures. The sustainability of the material could be ensured by reconstructing with low production costs (Arpacioğlu et al., 2015).
- While reconstructing, it is possible to design living and service areas in suitable sizes without changing the plan typology to meet the needs depending on today's living conditions. In order to keep every room warm in buildings, a stove radiator system could be installed using today's advanced industrial facilities. In this system, heat transfer could be made to the radiators in the rooms with the heating pipes from the stoves or galleys to be installed in the main living space. Thus, local materials will continue to be used as fuel.
- A similar system could be installed in wet areas or a water heater could be preferred. Hot water could also be supplied by establishing a solar energy system in regions where the climate is suitable.

## 5.2. Conservation Proposals and Legal Regulations for the Settlement

Maintenance and repair of buildings with traditional system or preventing the construction of reinforced concrete structures in place of deteriorated structures are important in terms of preserving the rural architecture. However, this can be achieved through cultural heritage protection programs by Ministry of Culture and National Rural Development Plan by Ministry of Agriculture and Ministry of Development (Eleventh Rural Development Plan 2019-2023).

Only 13 traditional buildings in Gölpazarı have registered as cultural properties and their ratio to the total number of buildings in the district is 3%. In the region, 207 buildings with traditional systems were identified and documented; unfortunately, 99 of these buildings have survived to the present day without losing their architectural features and the ratio of these structures to the number of buildings in the region is 35% (Figure 24).



**Figure 24** Diagram showing the ratio of the buildings registered as cultural property and proposed for registration (source: authors).

As a result of the analyzes carried out, although 108 buildings were built with the traditional system, it was not recommended to be inventoried as cultural heritage because they have lost their qualities or have suffered a great deal of loss. Inventorying buildings as cultural heritage is not sufficient for conservation. Conservation policies must be compatible with the rural, environment, forestry, agriculture, water, urbanization, tourism, education, energy, economy and administration development (Güler, 2019). Projects should be developed and a budget should be allocated for the protection of these buildings such as the Ministry of Culture, EU funds and TOKİ Credits in accordance with the Mass Housing Law.

Parcels of traditional buildings that have been lost, should be arranged as registered parcels in the Master plan, and new constructions should not be allowed in these parcels. Only the reconstruction of the destroyed buildings could be appropriate in these parcels with preserving the architectural features of the original building. The conservation of the vernacular heritage must be carried out by multidisciplinary expertise (ICOMOS, 1999).

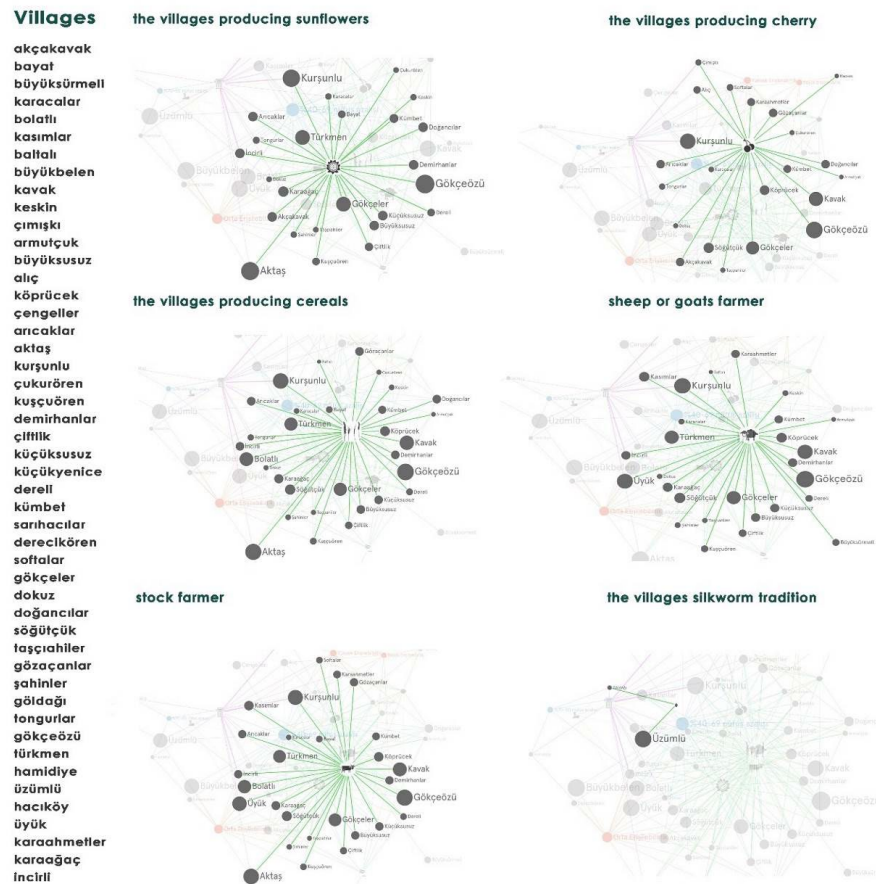
It is suggested that the existing buildings with reinforced concrete systems in the region should be arranged in accordance with the silhouette. Within the scope of facade projects, the window and shop joinery of the new buildings could be arranged in accordance with the traditional houses and the facade colors could be adapted to the region. Restoration works should also be included in the annual and 5-year plans, not only at the building scale but also at the settlement scale. Participation of the public in cultural programs the need to respect the community's established cultural identity and their attraction to rural areas should be ensured and awareness should be raised (ICOMOS, 1999).

### *5.3. Proposals for the Cultural Tourism and Economic Potential of the Region*

Rural tourism (agrotourism) is seen as a solution to problems such as local and foreign market opportunities, income for farmers, changing living standards, and unemployment. However, it provides a sustainable industry and minimum social impact (Kachniewska, 2015, 501). In the development of rural tourism, rational use of the natural and cultural heritage, development of the region's economy by small and medium-sized enterprises, mutually beneficial cooperation of the locals is required (Voinova et al., 2019, p. 249).

The region has agriculture and animal husbandry values. There is an excellent variety of products in the villages of Gölpazarı. Silkworm farming is still practiced in Üzümlü and Gölđađı villages (Figure 25). Until the last few years, the participation of local and foreign tourists, the "Cherry Festival" held in Gölpazarı was celebrated with enthusiasm. Events were held in the villages and exhibitions were held in Mihal Gazi Caravanserai. Over time, the festival started to lose its enthusiasm and the cherries produced in the settlement could not be marketed. Such festivals should be encouraged and increased participation for local and foreign tourists, agricultural enthusiasts as they benefit the region both socially and economically.

Besides that, stimulate the economy, the export initiatives of the farmer should be supported. In 2018, exportation agreements started with China and Gölpazarı. It had been an active market area in the Silk Road and during the Ottoman period. Today, the neglected large market area of the district could be organized so the surrounding settlements and villages could also be used (Table 2).



**Figure 25** The agriculture and animal husbandry potential of Gölpazarı villages (source: arranged by Keep Your Village Alive Project).

Government support should be provided for agriculture and animal husbandry, by evaluating these values of the settlement, the agricultural activities based on fruit as fruit juice, jam, canned food factories would be established, and new economic initiatives could be organized in which the young population would be employed.

There are also cultural and natural values in the district. Tourists are curious about rural architecture, culture, products, and traditions unlike their urban experiences (Kachniewska, 2015, 504,505). Utilizing these values with the opportunities to be created will not only bring vitality to the region economically but will also support the preservation of rural architecture by turning it into a center of attraction. Table 2 presents recommendations regarding the potential of the region, conservation problems, and their evaluation.

**Table 2** Proposals for the social, economic, cultural, and tourism wealth of the region

REGIONAL VALUES	PROBLEMS	PROPOSALS AND STRATEGIES
<b>Architectural Heritage Values</b> * Monumental buildings * Traditional civil architecture values and mansions	* Dysfunctional monumental buildings * Abandoned and damaged mansion and traditional buildings *Wrong interventons	* Restoring the mansions as a museum or a hotel. * New functions for traditional buildings. * Provide budget and funds for the restoration works. * Concrete constructions should not be allowed., * Prepare the master plans * Reconstructions with local material and techniques could be appropriate.
<b>Archeological Heritage Values</b> * Presence of tumulus and rock tombs belongs to prehistoric times. * Existence of Byzantine bath and church ruins	* Archaeological research has not been carried out yet.	* Conservation and interdisciplinary projects could be organized. * Archaeological areas should be revealed and introduced tourism attraction centers.
<b>Natural Values</b> * Suitable natural areas for climbing, paragliding, trekking.	*No cultural and tourism promotions, regulations. * Unprotected natural landscape	* Private and public cooperations could be organized to promote natural life and sports. * Since Gölpazarı is close to active nature tourism areas, there is an opportunity for natural tourism.



**Agriculture and Animal Husbandry Values**

- \* Exportations to Russia and China.
- \* Silkworm potential
- \* On the old Silk and Baghdad caravan routes.

- \* Decreasing exportation and commercial potential
- \* Animal husbandry has lost its importance.
- \* Migration due to economic problems.

- \* Government support should be provided.
- \* Food factories could be established to employ the young population.
- \* Creating new job opportunities
- \* The "Cherry Festival" which attracts local and foreign tourists should be made permanent.
- \* Commercial enterprises should be organized for silk weaving and handicrafts

In the villages of Gölpazarı, there are archaeological ruins of prehistoric periods, tumulus, and remains of Byzantine structures (Figure 2). The settlement also has architectural heritage values. Along with the monumental structures of the Early Ottoman period (Figure 4), there are traditional houses built with adobe building materials, which have Anatolian house plan typology and plan features reflected on the façades (Figures 8,9,10). The settlement is close to the center of Bilecik and is located on the Bilecik-Bursa, Istanbul, and Bolu-Taraklı road routes (Figures 1 and 4) should be considered an advantage. Taraklı district of Bolu is a settlement with a high rural tourism potential similar to Gölpazarı; the number of domestic and foreign tourists visiting this district on weekends, Gölpazarı can be turned into a center of attraction with Taraklı because of the advantage the transportation via Gölpazarı. It is recommended that the buildings in Gölpazarı, which are in a derelict and dilapidated condition or are about to lose their quality due to incorrect interventions, should be restored and given new functions with the budgets and legal regulations to be provided. Pavillion structures can be arranged as museums, as they symbolize traditional housing typology, and civil architectural buildings can be re-used as hotels and pensions.

The shops on the axis of the old bazaar can be restored and reactivated; local products are sold, and traditional crafts are exhibited. They can be arranged as a gathering place together with shopping. By evaluating the connection of the district center with the villages, the traditional square around Mihal Gazi can be activated with the square arrangement project (Table 2).

Figure 26 shows the relationship between the settlement with Bilecik center and surrounding districts. The settlement could be turned into a cultural and rural attraction center to be reached from Bilecik with the projects of "Bursa Bilecik Eskişehir Development Agency (BEBKA)".

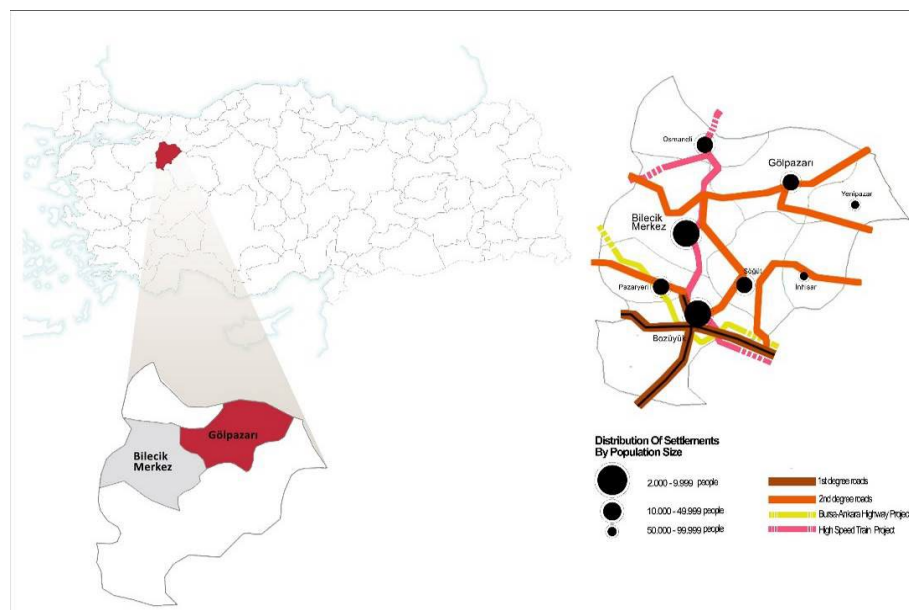


Figure 26 Bilecik and districts (illustrations arranged by Keep Your Village Alive Project).

The topography of the settlement is suitable for nature sports such as climbing, paragliding, and trekking, but the region's natural landscape still needs to be evaluated. Organizations related to nature sports are held in İnhisar and Yenipazar, close to Gölpazarı, so private and public cooperations could be organized for natural sports and tourism.

Arrangements should be developed to prevent the immigration of the local people in order not to leave rural areas unattended. In order to prevent migration from village to city, local power should be increased, and regional administration should be supported. Special measures should be developed for rural revitalization, and production forces suitable for rural areas should be increased (Council of Europe Committee of Ministers, 1973).

Natural and cultural opportunities of the rural areas should be evaluated and developed with tourism and economic policies. When a settlement becomes a center of attraction, it could manage its economic cycles. A sustainable economic structure can be created by revitalizing agriculture and animal husbandry, increasing public and private sector investments, creating new employment opportunities can be created by local characteristics of rural settlements, facilitating access to education, health, and cultural services, developing rural tourism and encouraging reverse migration.

With ensuring sustainability and re-functionalization of rural architecture by preserving; it will create an economic opportunity and also enable individuals to connect with the past in these areas socially. By increasing the attractiveness of these regions, people will be supported to move away from urban life and have periodic or permanent living spaces in rural areas.

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## Resume

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