Beykent Üniversitesi Fen ve Mühendislik Bilimleri Dergisi
Beykent University Journal of Science and Engineering

Research Article

BUJSE, 2026, 19 (1), 100-110
DOI: 10.20854/bujse.1937340
e-ISSN: 1307-3826
https://dergipark.org.tr/tr/pub/bujse.1937340

Structural Damage Assessment and Conservation for Religious Buildings in Rural Settlements: Hagios Theodoros Church

Kırsal Yerleşimlerde İbadet Yapılarının Strüktürel Hasar Tespiti ve Koruma: Bursa Hagios Theodoros Kilisesi

Lale KARATAŞ BİLLOR [1]

Author Information
1. Bursa Technical University, Faculty of Architecture and Design, Department of Architecture, Bursa, Türkiye, lale.karatas@btu.edu.tr, *Corresponding Author.*
0000-0001-8582-4612

Received: 24.04.2026
Accepted: 25.06.2026

To cite:
Karataş Billor, L. (2026). Structural Damage Assessment and Conservation for Religious Buildings in Rural Settlements. Hagios Theodoros Church, *Beykent Üniversitesi Fen ve Mühendislik Bilimleri Dergisi*, *19* (1): 100-110. https://doi.org/10.20854/bujse.1937340.

Abstract

This study examines the Hagios Theodoros Church, located in Harmanlı Village of Karacabey District, Bursa, through a holistic approach, that considers its material, structural, and spatial characteristics. The aim of the research is to identify the current deterioration processes affecting the building, reinterpret its original architectural features, and develop recommendations for its sustainable conservation. A qualitative methodology combining field surveys, visual documentation, and literature review was employed. The current condition of the building was assessed, using the MDCS Damage Atlas, focusing on deterioration observed in stone, brick, and mortar materials as well as weaknesses in the structural system. The findings reveal advanced material deterioration and, significant structural vulnerabilities, within the building. Therefore, urgent stabilization measures are required before any intervention. Although adaptive reuse of the building, as a cultural house and museum is proposed, its implementation depends on ensuring structural safety and securing its long-term conservation.

Keywords: Bursa, Conservation, Damage Assessment, Greek Churches, Material Deterioration, Rural Heritage.

Öz

Bu çalışma, Bursa'nın Karacabey ilçesine bağlı Harmanlı Köyü'nde bulunan Hagios Theodoros Kilisesi'ni malzeme, strüktürel ve mekânsal özellikleri birlikte ele alan bütüncül bir yaklaşımla incelemektedir. Araştırmanın amacı, yapıyı etkileyen mevcut bozulma süreçlerini belirlemek, özgün mimari özelliklerini yeniden yorumlamak ve sürdürülebilir korunmasına yönelik öneriler geliştirmektir. Çalışmada arazi incelemeleri, görsel dokümantasyon ve literatür taramasını bir araya getiren nitel bir yöntem izlenmiştir. Yapının mevcut durumu MDCS Hasar Atlası kullanılarak değerlendirilmiş; taş, tuğla ve harç malzemelerindeki bozulmalar ile taşıyıcı sistemdeki zayıflıklar incelenmiştir. Bulgular, yapıda ileri düzeyde malzeme bozulmaları ve önemli strüktürel zafiyetler bulunduğunu göstermektedir. Bu nedenle herhangi bir müdahale öncesinde, acil stabilizasyon önlemleri gereklidir. Yapının kültür evi ve müze olarak yeniden işlevlendirilmesi önerilmekle birlikte, bunun ön koşulu yapısal güvenliğin sağlanması ve uzun dönemli korunmanın güvence altına alınmasıdır.

Anahtar Kelimeler: Bursa, Koruma, Hasar Değerlendirmesi, Rum Kiliseleri, Malzeme Bozulması, Kırsal Miras.

1. INTRODUCTION

With the reforms implemented during the late Ottoman period, non-Muslim communities were given greater opportunities to build places of worship and to repair existing ones. In this context, the Greek Orthodox community, in particular, built numerous churches in different regions of Anatolia. Bursa and its surroundings became one of the important centers where these architectural activities were concentrated (Yıldız, 2014; 2018). When the literature on Ottoman-era Greek churches in Bursa is examined, it is seen that the studies are largely concentrated in Mudanya and its surroundings. Yıldız (2018) examined the 19th-century Orthodox churches in and around Bursa from an architectural perspective. Arslan (2023) focused on the conservation-oriented evaluation of Greek churches in Mudanya, while Aydın (2024) expanded the scope by addressing the architectural characteristics and conservation proposals for Greek Orthodox churches in the rural areas of Bursa.

In the literature, Greek church buildings in Bursa have generally been examined in terms of architectural features, archival documents, and restitution proposals. While this method is precious for understanding the historic and typological importance of those structures, research that comprehensively observes the relationship between material deterioration and structural weaknesses continues to be limited. Indeed, a recent study on Özlüce Aya Yorgi Church (Büyükdığan & Aydın, 2024) also emphasizes the insufficiency of studies in this area. A considerable part of research on Ottoman-duration Greek Orthodox church buildings in Bursa and its surroundings focuses on the city center or on Mudanya and its vicinity. However, existing physical conditions of Greek church buildings placed in different rural districts of Bursa have now no longer been analyzed in detail, nor have their potentials been addressed via a holistic method. Current research frequently documents the existence of those rural church buildings. Yet, the cause–impact relationships of deterioration mechanisms and conservation situations for the future of those structures are addressed simplest superficially.

Another notable gap in the literature is the tendency, to consider these structures solely as physical entities to be preserved. Rural churches are not evaluated within a broader cultural, economic, and spatial system. As a result, these buildings remain “inactive” not only physically, but also functionally and socially. Therefore, the main gap in the literature lies in the lack of detailed, analytical, building-scale studies on Greek churches in rural Bursa. This study addresses this gap through the case of the Hagios Theodoros Church. It aims to analytically reveal the material and structural deterioration processes of the building. It reinterprets its original architectural features and, based on these findings, proposes holistic strategies for its sustainable conservation.

1.1. Case Study: Hagios Theodoros Church

1.1.2. Location and historical background of the building

The Hagios Theodoros Church is located, in Harmanlı Village (formerly known as Kirmikir), within the Karacabey district of Bursa (Kaplanoğlu, 2001) (Figure 1).

Construction of the Hagios Theodoros Church began in 1833, and was completed in 1903. Dedicated to Saint Theodoros, the building represents an important example of 19th-century Ottoman Greek Orthodox architecture. Ottoman archival documents (H.1250/1834) include records related to the construction and repair of the church. Built by the Greek Orthodox community with the opportunities provided by the Tanzimat reforms, the structure was shaped through the collaboration of both Muslim and Greek craftsmen. The church is located in Harmanlı Village in the Karacabey district of Bursa. The history of this rural settlement dates back to the Byzantine period. A settlement known as Dlimitziri

once existed in the area; over time, this name evolved into Kirmikir. This building appeared in 16th-century Ottoman records as Pirimkir. Initially characterized by a predominantly Christian population, the settlement transformed into a multicultural structure in the late Ottoman period (where Turkish and Greek communities coexisted). Although demographic changes following the population exchange altered this structure, the village still preserves traces of different cultures and maintains its character as a multi-layered space of memory (Kaplanoğlu, 2001).

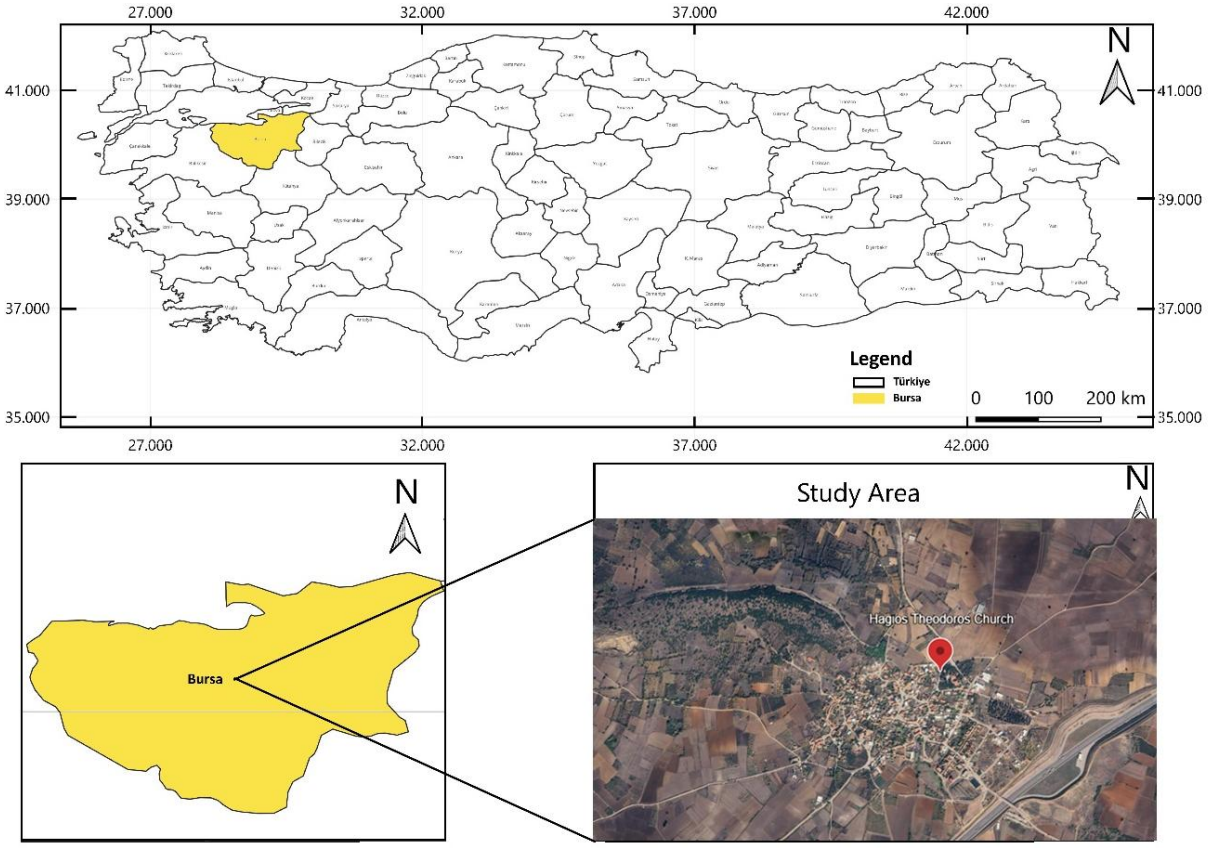


Figure 1. Location of Hagios Theodoros Church (The figure was prepared by the author based on Google Earth data)

Harmanlı Village was known as an important Greek settlement during the Ottoman period. Following the 1923–1924 population exchange between Türkiye and Greece, the Greek population of the village migrated to Greece, and the church was abandoned. After the exchange, the roof of the structure completely collapsed, and today it survives in a ruined condition, with only parts of its main walls still standing. The church was officially registered as an immovable cultural property requiring protection by the decision dated 08.03.2013 and numbered 86 of the Bursa Regional Council for the Conservation of Cultural Heritage (Aydın, 2024).

2. MATERIALS AND METHODS

This study is based on a qualitative studies technique that integrates field observations, visual documentation, and literature data. The study process was conducted in three stages: (i) documenting the contemporary condition of the building through fieldwork and analyzing its material and structural damages; (ii) reinterpreting the unique architectural configuration of the building based on information obtained from both literature and field studies; and (iii) holistically assessing these analyses within the framework of adaptive reuse and tourism potential.

Firstly, the current condition of the materials of the Hagios Theodoros Church was systematically classified according to the MDCS (Monument Identification and Conservation System) Damage Atlas (MDCS Damage Atlas, 2023). In this context, the deteriorations observed in stone, brick, and mortar materials were evaluated under various subcategories. Numerous field visits were conducted in 2026. During these visits, the west, east, north, and south facades and interiors of the church were examined observationally. Secondly, the original architectural features of the church were examined. In this context, existing physical traces from the structure, the building's plan scheme, materials, and literature data were interpreted together. Typological comparisons and architectural trace reading methods were used to form opinions about the original structure. The findings obtained regarding the original structure were systematized and presented in tabular form. Thirdly, the aim was to evaluate the cultural heritage characteristics of the area and the structure. In this context, the church structure was evaluated not only as a single building but also from a perspective that considers the surrounding rural settlement in all its aspects.

3. FINDINGS

3.1. Damage Assessment of the Current Condition of the Buildıng

3.1.1. Problems observed in building materials

Stone: Similar types of deterioration were observed on the stone surfaces across all façades of the Hagios Theodoros Church: material losses (lacuna) are particularly intense at the upper levels of the façades. In addition, surface soiling caused by the accumulation of dirt, dust, and soil, as well as chromatic alterations, are widespread. Cracking is observed between stone courses, and displacement is evident in some blocks. Biological growth such as vegetation, lichen, and moss has developed especially near ground level and along wall tops. There are some differences, in the intensity and distribution of deterioration among the façades. On the west façade, surface soiling and mechanical damage are more pronounced in addition to material losses, while architectural traces are relatively better preserved, compared to the other façades. On the east façade, more advanced material losses are identified, particularly at the upper levels, due to significant wall collapse. On the north façade, losses and cracking are concentrated around the arch zones, whereas on the south façade, vegetation growth is more intense compared to the other façades, in addition to upper-level collapse and material loss. In the interior walls, widespread material loss (lacuna), soiling, chromatic alteration, and cracking are observed on stone surfaces. Vegetation growth (grass, moss, etc.) is also present near ground level. On the north wall, advanced material loss is evident, with upper sections largely collapsed and stone blocks partially or entirely missing. On the west wall, particularly around the entrance arch, stones have disappeared or become displaced. On the east wall, continuous cracking along stone courses is observed. On the south wall, stone surfaces have become more exposed due to plaster loss (Figure 2).

Brick: On the façades, brick material generally exhibits disintegration processes, including crumbling and surface erosion. The continuity of brick courses is partially lost, and partial or complete losses are observed at upper levels. Surface soiling and chromatic alterations are evident across all façades. Cracks are present along stone–brick junctions. On the west façade, advanced disintegration in brick elements is accompanied by losses and displacement, particularly in arch regions. On the east façade, especially at upper levels, brick courses have lost continuity, and widespread material loss is evident. On the north façade, disintegration and material loss occur together in the arch zones where brick is used. On the south façade, cracks along junction lines of brick elements are particularly noticeable. In the interior walls, brick deterioration is especially concentrated in arch regions. On the interior west wall, most arch bricks have been lost, and the remaining ones are displaced. On the interior east wall, discontinuities and partial losses are observed at upper levels. Overall, disintegration, crumbling, and surface erosion are widespread in the interior, with cracks particularly concentrated along junction lines (Figure 2).

Mortar: Mortar has been identified, as the weakest and most deteriorated component across all façades. Due to loss of cohesion, the mortar has disintegrated into powder and fallen away. Joint voids and, in some areas, complete losses have occurred, with widespread cracking. Additionally, erosion has caused thinning of the mortar texture and loss of continuity. Notably, on the east façade, mortar is the most weakened material, with more widespread losses and discontinuities. On the west façade, loss of cohesion and joint voids are prominent; on the north façade, joint disintegration and losses are dominant. And on the south façade, surface erosion and mortar thinning are more evident. In the interior walls, particularly on the north and west sides, loss of cohesion and joint voids are more intense, whereas on the east and south walls, erosion and localized complete losses are observed (Figure 2).

3.1.2. Problems observed in the structural system

The facades and interiors of the Hagios Theodoros Church were evaluated observationally. The building's wall system is a stone-brick composite. According to the observational results, it appears that the structural integrity of the wall system, has been largely lost. The upper parts of the east, south, and west facades are largely missing. Due to the material losses, concentrated in the upper parts of the facades, the load-bearing cross-section is reduced. In the north facade, infill voids are observed in the arches. This disrupts the continuity of load transfer in the wall. In this case, vertical loads will be carried over a smaller area on the wall, and it is highly likely that the stresses in the wall will increase. This increase in stress concentration will significantly reduce the original load-bearing capacity of the structure, and in this case, due to the weakening of the wall's interlocking system, the walls may become fragmented and loose (Çağlar et al., 2023). As a result, loads are no longer distributed homogeneously and create local weak areas. It is clear that the widespread cracks observed throughout the structure are most likely due to this situation (Figure 2).

Various studies have shown that cracks in structures often indicate that the load-bearing system is under intense and active stress. Notably, some researchers have suggested that cracks, particularly those concentrated around arch areas and wall joints, indicate changes in load transfer pathways. Another significant structural risk identified is out-of-plane instability in the walls. It is estimated that the loss of upper wall sections, in particular, hinders lateral support, reduces stability, and increases the risk of collapse. Various studies have shown that in arched systems, the loss of topfill and lateral support prevents adequate resistance to thrust forces and increases the risk of spreading and opening in arch supports. Furthermore, various researchers have found that environmental factors and biological growth accelerate this process; moisture and plant roots disrupt wall continuity, making the already weakened structural system even more fragile (MDCS Damage Atlas, 2023). Based on all these findings in the literature, it is believed that the structure exhibits both a loss of continuity in vertical load transfer and a weakened stability under horizontal loads. Therefore, the structure requires interventions to strengthen its emergency stabilization and load-bearing system (Figure 2).



Figure 2. Views from the façades and interior of the building (Karataş Billor, 2026) a) West façade b) East façade c) North façade d) South façade e) Interior view (west wall) f) Interior view (east wall g) Interior view (north wall) h) Interior view (south wall)

3.2. Identification of the Original State of the Building

Based on the data obtained from the current condition of the Hagios Theodoros Church, along with architectural traces and literature research, the inferences regarding its original architectural configuration are summarized in Table 1.

Table 1. Architectural Inferences on the Current Condition and Original State of the Building (The table 1, was prepared by the author based on on-site observations and architectural documentation derived from Ötüken et al. (1986) and Aydın (2024)

Architectural Component	Current Condition	Architectural Inference on Original State	Basis
Plan Scheme	Single-nave plan is readable	Single-nave basilical layout	Plan trace
Apse	Semi-circular projection exists	Liturgical focus- located in the apse	Physical trace
Narthex	No trace	No narthex present	Plan analysis
Dimensions	17.30 × 9.50 m	Medium-scale rural church	Measurement data
Entrance	Arched doorway exists	Entrance opens directly to the naos	Physical trace
Façade Traces	Column traces, consoles	Façade composition rising at entrance axis	Physical trace
Windows (West)	Large central, smaller side windows	Hierarchical window arrangement	Façade analysis
Windows (Side)	Two windows on each side	Symmetrical arrangement	Physical trace
Walls	Upper levels collapsed	Originally higher walls	Structural reading
Tie Beams	Timber traces present	Horizontal bonding system existed	Physical trace
Material	Stone–brick masonry	Alternating (almaşık) system with plastered surface	Material analysis
String Course	Brick traces present	Horizontal façade-defining element	Physical trace
Roof	None	Double-pitched- gable roof	Comparative analysis
Naos	Existing	Main worship -space	Plan reading
Bema	No trace	Level difference (steps) existed	Typological comparison
Window Form	Traces present	Semi-circular arched, inward-sloping	Trace + comparison
General Condition	Partially standing	Original architectural configuration, largely readable	Holistic analysis

3.3. Identification of the Cultural Heritage Values of the Site and the Building

When considering the universal value of the examined church, it is seen that it represents 19th-century Ottoman Greek Orthodox rural religious architecture. Features such as its single-nave basilica plan, apse-nave relationship, and alternating stone-brick masonry system reflect the architectural character of the period. The structure has undergone transformations following the Byzantine period and the Republican era, reflecting the continuity and population exchange. This situation places the examined church within a multi-layered cultural landscape. This multi-layered context strengthens the building's

memory and identity value within the settlement. When examining the building's national values, the findings indicate that it is a registered cultural asset due to its architectural originality, plan scheme, and material characteristics. When researching the building's local values, the following findings were identified: The building is a focal point reflecting the multicultural past of Harmanlı, the area where it is located.

The building's relationship with the surrounding natural landscape is very good. In this context, it is clear that the building has the potential to create social and economic value through tourism and proposed adaptable reuse scenarios. In this context, the primary approach proposed for the building is its adaptable reuse as a cultural center and museum. Exhibition scenarios developed within the church could be proposed as one of the main spaces created in the area. In this context, the multicultural past of the region could be presented to visitors, based on photographs from the Greek period of the village, Ottoman archival documents, objects of daily life, and oral history narratives related to the population exchange. Furthermore, it is suggested that events such as concerts, exhibitions, workshops, and local festivals be organized to transform the building into a dynamic cultural space. Thus, all these elements, along with the church, could be reintegrated into village life. The settlement where the church is located is close to important natural areas such as Lake Uluabat and the Karacabey Floodplain Forests. The area also features water features and dense green spaces. In this case, ecotourism could also be a factor that makes the building an attractive location. Due to its location, the church can be not only a place of worship but also a focal point where nature and culture can be experienced together. In this context, it is also proposed that the building be integrated into a nature-culture route, considering its historical fabric within the village. Natural areas around Lake Uluabat can be integrated with existing walking and cycling paths to increase visitor accessibility.

When the structure is evaluated within the scope of all these proposals, it is expected that these applications will contribute both to the individual preservation of the structure and to the social and economic development of the region. Cultural events and increased tourism activity can create new income sources for local residents. In this context, the local people will increase their sense of belonging within the village. Increased income sources will reduce migration. However, certain issues need to be considered while implementing all these proposals. The project should be developed within the framework of low-impact and sustainable tourism, taking into account the Ramsar status of Lake Uluabat and the ecological sensitivity of the Karacabey Floodplain Forests. Otherwise, we may cause damage to nature with excessive population density. A careful evaluation should be made by experts on this matter, and the human density should be planned accordingly.

4. DISCUSSION AND CONCLUSION

This study was conducted to propose conservation strategies for Hagios Theodoros Church located in rural Bursa. The research identified the existing material and structural deterioration processes of the building, revealed its original architectural characteristics, and developed sustainable conservation recommendations based on these findings.

The findings suggest that the number one precedence for the conservation of the building is the mitigation of existing structural and material-associated risks. In this context, sustainable conservation recommendations had been advanced through thinking about the contemporary structural circumstance and material traits of the church. Notably, due to material losses in the upper sections of the alternating stone–brick masonry walls, joint voids, cracks, reduced load-bearing capacity, and the risk of outward wall displacement, structural strengthening interventions are recommended as a priority. These interventions consist of the finishing touch of wall heads, using appropriate stone and brick units, the utility of brief or everlasting consolidation, through support structures in arch regions, the repointing of joints with breathable, reversible mortars well suited with the unique mortar composition, and the improvement of moisture control and drainage structures following organic

cleansing. Material interventions should follow the principle of minimal intervention; environmentally compatible materials that do not promote, salt accumulation ought to be preferred for cleansing and consolidation treatments on stone surfaces. Particular attention should also be paid to preserving the unique alternating stone–brick masonry texture of the structure. All proposed interventions should be applied using reversible, economical, and locally sourced techniques to ensure the long-term sustainability of the building (Türkeri, 2022).

Various previous studies in the literature support this approach. Several studies have shown that repurposing decisions made without sufficient consideration of structural performance can carry significant risks. For example, the study by Büyükdığan & Aydın (2024) presented the following findings: The Özlüce Aya Yorgi Church was reopened as a cultural center before its structural adequacy was fully ensured. However, due to structural problems that emerged after its reopening, the building had to be evacuated. Therefore, the proposal to repurpose the Hagios Theodoros Church as a cultural center and museum should only be implemented when the following conditions are met: First, conservation interventions such as urgent structural strengthening, preservation of wall tops, securing of arches, and control of biological formations should be implemented. To avoid negative consequences, the building should then be repurposed. Furthermore, in this study; The conservation approach outlined in ICOMOS (1964) and ICOMOS-IFLA (2017) has been carefully considered in line with current rural heritage literature. According to these approaches, cultural tourism in rural heritage settlements offers significant opportunities in terms of local economic vitality, social resilience, and identity formation. However, it is also important to note that demographic change can bring risks such as ecological pressure and overuse. In this context, considering the Hagios Theodoros Church as part of a nature-culture route together with the natural landscape around Lake Uluabat is valuable.

However, according to these international principles, this potential needs to be developed within a low-impact and carefully managed framework based on sustainability principles. Lake Uluabat has Ramsar Site status, demonstrating the ecological sensitivity of the region. Therefore, consumption-oriented approaches based on density should be avoided. Instead, this study proposes adopting an approach that integrates the conservation of nature and cultural heritage through activities such as hiking, cycling, guided interpretation events, local production, and small-scale cultural events. Another suggestion in the study, the nature-culture route approach, offers significant potential for increasing the tourism capacity of the region. However, certain points need to be considered in this context. It is imperative that the area be managed with a low-impact and controlled tourism model, taking sustainability principles into account. Otherwise, irreversible pressures on both natural and cultural values may occur. In conclusion, this study emphasizes that the preservation of a rural Greek Orthodox church is not merely a matter of physical restoration. Future conservation and repurposing proposals highlight the importance of developing more comprehensive and implementable conservation strategies by considering the relationships between material deterioration, structural risks, cultural memory, and sustainable tourism together.

For future studies, it is recommended that the seismic behavior of historic structures be evaluated and that the structural performance of the building be analyzed through numerical modeling (FEM) (Çağlar et al., 2023). Furthermore; material analysis may contribute to the development of more accurate, and effective intervention strategies. It is likewise essential to assess the proposed adaptive reuse scenarios through user experience and visitor perception studies. In addition, comparative studies of similar Greek church buildings in rural Bursa may contribute to the development of regional conservation and tourism strategies.

REFERENCES

Arslan, N. (2023). Assessment of the Rum Churches in Mudanya (Bursa) for the Purpose of Conservation [M.S. - Master of Science]. Middle East Technical University.

Aydın, M. F. (2024). Osmanlı dönemi Rum Ortodoks kiliselerinin mimari özellikleri ve koruma önerileri: Bursa örneği / Architectural characteristics and conservation proposals of Ottoman period Greek Orthodox churches: The case of Bursa. (Yayımlanmamış Doktora Tezi). Maltepe Üniversitesi, Lisansüstü Eğitim Enstitüsü, Mimarlık Ana Bilim Dalı, İstanbul.

Büyükdığan, İ., & Aydın, M. F. (2024). Bursa Özlüce-Aya Yorgi Kilisesi Hakkında Bir Değerlendirme ve Restitüsyon Önerisi. KAPU Trakya Mimarlık ve Tasarım Dergisi, 4(1), 23-35. https://izlik.org/JA34JG46JP

Çağlar, N., Vural, İ., Kırtel, O., Sarıbıyık, A., & Sümer, Y. (2023). Structural damages observed in buildings after the January 24, 2020 Elazığ-Sivrice earthquake in Türkiye. Case Studies in Construction Materials, 18, Article e01886. https://doi.org/10.1016/j.cscm.2023.e01886

Google. (n.d.). Hagios Theodoros Church, Harmanlı, Karacabey [Satellite and 3D imagery]. Google Earth. Retrieved April 24, 2026, from https://earth.google.com/web/@40.2486687,28.4284306

ICOMOS (1964). International charter for the conservation and restoration of monuments and sites (The Venice Charter 1964). https://www.icomos.org/images/DOCUMENTS/Charters/venice_e.pdf

ICOMOS-IFLA. (2017). ICOMOS-IFLA principles concerning rural landscapes as heritage. Adopted by the 19th ICOMOS General Assembly, New Delhi, India, 15 December 2017. https://www.icomos.org/images/DOCUMENTS/Charters/GA2017_6-3-1_RuralLandscapesPrinciples_EN_adopted-15122017.pdf

Kaplanoğlu, R. (2001). Bursa Ansiklopedisi I (Yer Adları). Avrasya Etnografya Vakfı Yayınları.

Karataş Billor, L. (2026). [Personal Archive]. Bursa, Türkiye.

MDCS Damage Atlas, (2023). MDCS / Monument Diagnosis and Conservation System. The online damage-expert for monumental buildings. https://mdcs.monumentenkennis.nl/damageatlas

Türkeri, İ. (2022). Dinî Mimaride Doğal Taş Kullanımı: Sancaklar Camii ve Beylikdüzü Fatma Ana Cemevi. Tasarım Mimarlık ve Mühendislik Dergisi, 2(1), 1-9. https://izlik.org/JA84JZ85NF

Ötüken, Y., Durukan, A., Acun, H. & Pekak, M.S. (1986). Türkiye'de Vakıf Abideleri ve Eski Eserler IV. Vakıflar Genel Müdürlüğü Yayınları, Ankara.

Yıldız, E. (2014). Bursa'daki Bizans Sonrası Hristiyan Dinî Mimarisi. (Yüksek Lisans Tezi). Yüzüncü Yıl Üniversitesi, Sosyal Bilimler Enstitüsü Sanat Tarihi Anabilim Dalı, Van.

Yıldız, E. (2018). Bursa ve Çevresinde Osmanlı Dönemi Ortodoks Kiliseleri. Ordu Üniversitesi Sosyal Bilimler Enstitüsü Sosyal Bilimler Araştırmaları Dergisi, 8(2), 261-288. https://izlik.org/JA23DN87CP

DECLARATIONS

Author Contributions and Conflict of Interest Statement: The study is single-authored. There is no conflict of interest.

Acknowledgments and Information Note: The article complies with national and international research and publication ethics. Ethics Committee approval was not required for the study.

Use of Artificial Intelligence: During the preparation of this manuscript, artificial intelligence-based tools were used solely for translation, grammatical corrections, and improving the readability and clarity of the text through wording and sentence refinement. Artificial intelligence was not used in the design of the study, data collection, data generation, data analysis, interpretation of the results, or the production of the scientific findings. The author takes full responsibility for the accuracy, integrity, and scientific content of the manuscript.

Data Availability: The data pertaining to this study can be provided by the author upon request.

Similarity Rate: According to the originality report obtained from the 'intihal.net' program, the similarity rate of the article is 5%.