



# Tourism, Heritage and Biodiversity in Sighisoara

Gabriel Valentin Georgescu<sup>1</sup>

<sup>1</sup> *Department of Urban Planning, "Ion Mincu" University of Architecture and Urbanism, Bucharest, Romania*

**Abstract.** This study investigates the dynamic interplay between tourism and heritage conservation in the medieval city of Sighisoara, Romania. It highlights how modern tourism, while providing economic benefits, often exerts significant pressure on heritage sites, potentially altering their intrinsic cultural and environmental values. The research aims to analyze the challenges posed by intensive tourism, explore its impact on urban biodiversity, and propose sustainable heritage management strategies.

Methodologically, the study employs a multidisciplinary approach, including archival research, field studies, and comparative analysis with other European medieval cities. Key findings reveal that while tourism contributes positively to local economies, it also leads to overcrowding, commercialization, and degradation of heritage and natural resources. Recommendations include the implementation of ecotourism models, enhanced community engagement, and the development of robust management plans.

This paper contributes to the literature by addressing the specific challenges faced by inhabited medieval fortresses like Sighisoara and by proposing actionable strategies to balance tourism and heritage preservation. The integration of urban biodiversity into heritage conservation is emphasized as a novel approach, ensuring long-term sustainability and enriching the cultural identity of heritage cities.

**Keywords:** heritage tourism, medieval cities, urban biodiversity

**Résumé.** Cette étude explore l'interaction dynamique entre le tourisme et la conservation du patrimoine dans la ville médiévale de Sighisoara, en Roumanie. Elle met en lumière comment le tourisme moderne, bien qu'apportant des avantages économiques, exerce souvent une pression significative sur les sites patrimoniaux, pouvant altérer leurs valeurs culturelles et environnementales intrinsèques. La recherche vise à analyser les défis posés par le tourisme intensif, à examiner son impact sur la biodiversité urbaine et à proposer des stratégies durables de gestion du patrimoine.

Sur le plan méthodologique, l'étude adopte une approche multidisciplinaire, incluant des recherches d'archives, des études de terrain et une analyse comparative avec d'autres villes médiévales européennes. Les résultats principaux montrent que, bien que le tourisme contribue positivement aux économies locales, il engendre également surfréquentation, commercialisation et dégradation des ressources patrimoniales et naturelles. Les recommandations incluent la mise

---

## CORRESPONDENCE :

Strada Academiei 18-20, Bucharest, 010014, Romania

[arh.gabrielgeorgescu@gmail.com](mailto:arh.gabrielgeorgescu@gmail.com) (G.V.G)

## ARTICLE HISTORY:

**Received:** 23.08.2024

**Received in final form:** 5.12.2024

**Accepted:** 15.12.2024

en œuvre de modèles d'écotourisme, une participation accrue de la communauté et l'élaboration de plans de gestion solides.

Cet article apporte une contribution significative en abordant les défis spécifiques rencontrés par des forteresses médiévales habitées comme Sighișoara et en proposant des stratégies concrètes pour équilibrer tourisme et préservation patrimoniale. L'intégration de la biodiversité urbaine dans la conservation du patrimoine est mise en avant comme une approche novatrice, garantissant une durabilité à long terme et enrichissant l'identité culturelle des villes patrimoniales.

**Mots-clés:** tourisme patrimonial, cités médiévales, biodiversité

## Introduction

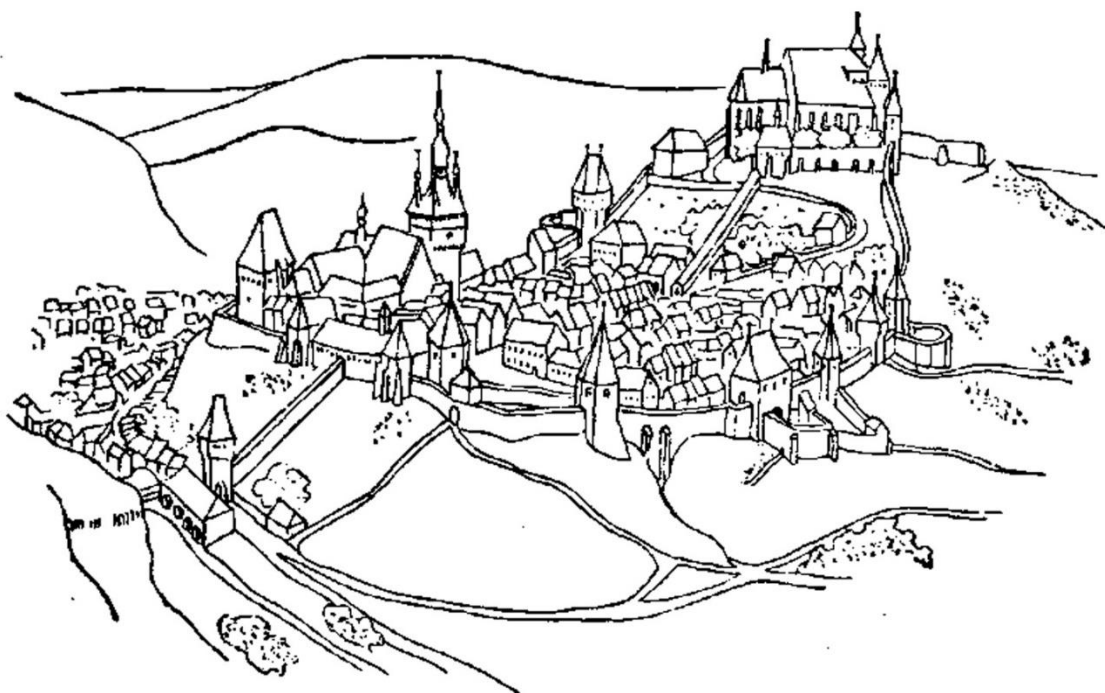
This study investigates the vital role of heritage in shaping and preserving the identity of communities, focusing specifically on the medieval city of Sighișoara. The research addresses several key hypotheses: (1) tourism has both positive and negative effects on heritage preservation and urban biodiversity (Cristini and Soriano, 2020); (2) intensive and aggressive tourism practices threaten the sustainability and authenticity of inhabited medieval fortresses like Sighișoara (Figure 1) and (3) integrating biodiversity into heritage management strategies can mitigate tourism-related challenges while enhancing cultural identity.

The primary research questions include: How does tourism impact the built heritage and natural biodiversity of Sighișoara? What strategies can be implemented to balance economic benefits and cultural preservation? How can sustainable tourism practices contribute to heritage conservation in the context of global challenges such as climate change and urbanization? (Light, 2007)

The study's objectives are threefold: (1) to analyze the effects of tourism on Sighișoara's heritage and biodiversity, (2) to propose actionable, sustainable solutions for managing these effects and (3) to contribute to the broader discourse on balancing tourism development with heritage preservation.

Conceptually, the research draws on interdisciplinary approaches, incorporating urban planning, sociology, and environmental studies (Timothy and Boyd, 2006). The proposed framework emphasizes the integration of urban biodiversity into heritage management, an area often overlooked in international studies. This novel perspective contributes to existing literature by providing actionable strategies and insights specific to inhabited medieval fortresses, making the findings applicable to other European heritage cities (Quinn, 2002).

Sighișoara's unique historical, cultural, and ecological context, combined with its inclusion on the UNESCO World Heritage list, makes it an ideal case study. The findings from this research aim to address gaps in the literature and offer practical solutions to the challenges faced by similar heritage sites worldwide (Garrod and Fyall, 2000).



**Figure 1.** Sighisoara, reconstruction from 1740

Source: [https://commons.wikimedia.org/wiki/File:Sighisoara\\_1740\\_reconstituire.PNG](https://commons.wikimedia.org/wiki/File:Sighisoara_1740_reconstituire.PNG)

## **1. Theoretical background and literature review**

Tourism and heritage have in common the fact that they are sectors of activity that cannot be relocated. However, visitors are mobile. Therefore, it is essential to focus on improving working methods, reception, tourism offer and heritage promotion.

However, one cannot come up with a strict definition of heritage tourism. Philippe Belaval, president of the Center for National Monuments in France, argues, and rightly so, that quality tourism is eminently cultural. The place that heritage occupies in tourism has, unfortunately, been neglected for a long time (Russo and Borg, 2002).

The Citadel of Sighișoara already existed back in 1191, but it appeared as such in the documents only around 1280, initially bearing the name *Castrum Sex*, a name preserved from the XIII Roman legion *Gemina*, which had been quartered centuries ago in the existing *castro*. It became *Schespruch* in 1298 (later "*Schäßburg*"). The locality is mentioned in 1367 as "*civitas*" (city). In 1298 there was a well-organized corporation of guilds in Sighisoara with great privileges granted to the Saxon community (Rusu, 1982). The names of the various towers still existing (9 out of the original 14), such as the Butchers' Tower, the Furrier's Tower, the Tailors' Tower, as well as numerous

tombstones with the insignia of the guilds preserved in the Old Church (Biserica Veche), are a vivid proof of the old history (Figure 2) (Iorga, 1935).



**Figure 2.** Tombstones with the insignia of the guild

Source: author

The Hill Cemetery (Cimitirul din Deal) or the Cemetery of the Saxons is also registered in the UNESCO heritage list.

The Saxon settlers who came starting with the second half of the 12th century to southern Transylvania, founded a rural settlement near the water of the Saeș (Schaas) stream. The name of the stream also became that of the town at the end of the 13th century – Schässburg or the Citadel on the river Schaas, as the historian Nicolae Iorga mentions in one of his writings (Iorga, 1935).

Pascu Ioan comes with relevant clarifications: "The oiconims, or initial names of medieval localities, are usually made up of two distinct parts, one nominative-communal, which specifies a class differentiation (village, market, city, fortress, etc.), another nominative-proper, which indicates the particular and relevant characteristics of the class unit" (Pascu, 2021).

The historical center of Sighișoara was included in the World Heritage List in 1999 during the 23<sup>rd</sup> session of the World Heritage Committee, at item 902, based on criteria (iii), (v). What does this mean?

Criterion (iii) indicates that Sighișoara represents a remarkable proof of the culture of the Transylvanian Saxons, a culture that has evolved for 850 years and will continue its existence mainly through its architectural and urban monuments.

On the other hand, Criterion (v) reflects that Sighișoara is a remarkable example of a small fortified city located on the border between the Latin culture of Central Europe and the Orthodox Byzantine culture of South-Eastern Europe. The

apparently uncontrollable process of emigration of the Saxons and the disappearance of the social class that created and preserved the cultural traditions of the region endanger the preservation of its architectural heritage (Smith, 2014).

This includes the Sighișoara Citadel (Cetatea) and the Citadel Hill (Dealul Cetății) on which the Citadel is located and a part of the Lower Town, in the southeast area. The nucleus of the original Saxon settlement, founded in the medieval period, occupies approximately 33 ha. There is also a buffer zone of 145 ha, and the two protected areas totaling 178 ha represent 14% of the surface of the inner city territory of the municipality of Sighisoara.

Continuing to be inhabited from the 1260s until today, the historic center of Sighișoara is defined as the most representative medieval urban site in Transylvania. In fact, Sighisoara is considered to be the only medieval fortress still inhabited in southeastern Europe. The historical center of Sighișoara has mostly preserved its urban space organization and the architectural quality of the buildings that make it up, the rest of the city failing to phagocytize the old city (Graham et al., 2000).

Cetatea, (the Citadel), or the historical monument itself, proves representative characteristics of the medieval Saxon settlements developed in the intramuros and extramuros, in direct connection with the elements of the natural environment and in connection with the commercial roads of territorial importance from the medieval and pre-modern epoch.

Another peculiarity of the city is the separate character of the two constituent parts of the historical center of Sighisoara: Citadel and the Lower Town. The two areas present distinct urban and architectural elements, conferred primarily by the configuration of the plot, of the street grid. The configuration of the built fund preserves and draws the limits of the role of urban spaces within the life of the city (Burgplatz/City Square versus Marktplatz/Commercial Market), the location of buildings of public interest, the types of economic activities undertaken in the two areas and the social categories that lived in the two areas (Mayo et al., 1996).

We speak about a unitary ensemble which authentically reflects the multicultural and multiethnic space through the imprint of medieval, premodern and modern architectural styles. The style prevailing is an initial rustic Gothic, over which specific local elements or dictated by events, interests and the fashion of the time were grafted (Hernandez et al., 2017).

From the old defensive system, 9 towers, 2 bastions and part of the enclosure wall can still be admired today. The towers were placed in the spots considered to be vulnerable within the fortress and were provided with shooting galleries and artillery bastions. Among them, the Clock Tower (64 m high) (Figure 3) is the most impressive, being one of the great monuments of Transylvania and the symbol of the city of Sighișoara at the same time. The clock in the tower is equipped with two huge dials (2.40 m diameter) and a rotating installation with painted wooden figurines,

representing deities from the Greco-Roman and Germanic pantheon, wearing symbols from medieval alchemy on their heads. The tower also houses the city's History Museum. Around 1884, the guilds were abolished as a result of the significant decrease in their importance in the economic landscape of the city.

Out of the 9 functional churches during the 14<sup>th</sup>-18<sup>th</sup> centuries, 3 are still preserved to this day, namely the Monastery Church (Biserica Manastirii), the Hill Church (Biserica din Deal) and the so-called Lepers Church (Biserica Leproșilor). The churches are decorated with rare pieces of religious sculpture and paintings, and also funerary monuments (Dragulescu and Stanciulescu, 2014).



**Figure 3.** The Clock Tower

Source: <https://casa-breslelor.ro/turnul-cu-ceas-sighisoara-program-vizitare-istorie/>

Biserica din Deal, dedicated to St. Nicholas, is the most important architectural monument of the city, representative of the Transylvanian Gothic style. It houses a remarkable ensemble of mural paintings (14<sup>th</sup> and 15<sup>th</sup> centuries), a series of funerary monuments (16<sup>th</sup>-17<sup>th</sup> centuries), pieces of medieval furniture (15<sup>th</sup> - 16<sup>th</sup> centuries), as well as a Gothic polyptych shrine.

Biserica Mănăstirii, dedicated to St. Mary is in close proximity to the Clock Tower and dates from the second half of the 13<sup>th</sup> century, being attached to the Dominican monastery. The choir with a polygonal apse preserves the original Gothic, ogival vault.

The Church of the Holy Spirit (Biserica Sfântului Spirit), or of the Lepers, built outside the citadel, which housed a leprosy and strategically and ingeniously hid the

city's treasury during hard times, should not be omitted either. The Church of the Lepers officially has a Saxon name - Siechhof, meaning "Court of Tranquility". Because of the leprosy, the Church of the Holy Spirit was never included in the urban area of the epoch.

The church organ was built in 1865 by Samuel Friedrich Binder, and in the summer of 2018 it was moved to the Monastery Church within the Medieval Citadel of Sighisoara. Like all the organs built by Samuel Friedrich Binder in Transylvania, this one also bears the imprint of the neo-Gothic style, made of solid wood, with 5 fields and zinc tubes. The church can boast of a painting in oil executed in 1882 by the painter and photographer Ludwig Schuller. Unfortunately, although built in a rustic Gothic style, characteristic of Transylvania and housing some heritage treasures, the Church of the Lepers remained in a cone of shadow, not being included in the tourist route.

The old citadel of Sighisoara, an important element of the built heritage of Transylvania, is a generous and exciting tourist destination. It is quite impressive that most of the 164 residential houses in the Citadel, having at least 300 years of age, are considered historical monuments. The characteristic 14<sup>th</sup>-15<sup>th</sup> century river stone semi-cylindrical vaults have profiled stone window frames imitating Venetian Gothic, rooms with coffered ceilings and fully painted halls. (Rusu, 2015).

The Venetian House (Casa Venețiană/Mann House) dates from the 16th century and has a two-storey structure. Its name is due to the double windows which trilobed frames imitate the Venetian Gothic.

A particularly original construction, the largest of its kind in Transylvania, is the Students' Staircase (Scara Scolarilor), which facilitated access to the High School and the Hill Church, especially during winter time.

The small original settlement, having a 930 m long defense wall, which in some places reached a height of 14 m, was built on a hilly plateau and equipped with 14 defense towers in an era when the incursions of the nomadic Tatars or Ottoman Empire endangered the very existence of the settlement. The towers bore the name of the guild responsible for their proper maintenance and operation. At the same time, the tower was a place for meeting and debating the affairs of the guild.

The Tower of the Tinsmiths (Turnul Cositorarilor) 25m high and having 4 storeys, could never be conquered. Even today, bullet marks dating back to 1704 can be seen. The Blacksmiths' Tower (Turnul Fierarilor) was burned down in 1676, but was completely rebuilt later, preserving its architectural original features (Bacila, 2015).

The Shoemaker's Tower (Turnul Cizmarilor) is mentioned for the first time in 1521. Reconstructed in 1681, after the big fire of 1676, the tower is today the headquarters of Jurnalului Sighișoara Reporter and RadioSon Sighișoara radio station. The commemorative plaque bearing the city's stone coat of arms, with the motto "Nomen Domini Turris Fortissima" (the name of the Lord is the strongest tower) was

once part of the Shoemaker's Tower. It is now kept at the Museum of History in the Clock Tower (Ionescu, 2017).

The aforementioned Clock Tower is regarded as a symbol of Sighisoara and one of the main points of cultural and touristic interest of the city. The clock with figurines is unique within the Romanian touristic space and reminds, in miniature, the astronomical clock with figurines in the center of the city of Prague. At the end of the 17th century it was added baroque crowning, similar to the existing one at St. Vitus Cathedral in Prague.

The clock's seven linden wood figurines represent the days of the week, as personifications from mythology and symbols from astronomy, astrology and alchemy: Sunday is a female figure with a crown of golden rays and symbolizes gold (Popescu, 2018); Monday is the goddess of the Moon, Diana and symbolizes silver; Tuesday is the war god Mars, the symbol above his head is the iron; Wednesday is the god Mercury, or Hermes, god of merchants, travelers but also of thieves and magic. The symbol above the head represents alchemical mercury (Rusu, 2019); Thursday is the god Jupiter, and the symbol above his head represents the tin. Alchemists surprisingly associated tin with mystery, but also with discoveries; Friday is Venus, the goddess of beauty and love, and the symbol above her head is copper; Saturday is Saturn, the god of fertility and underworld, the symbol above his head representing lead (Toma, 2020). At the top of the tower, the rooster indicates the direction of the wind. But for medieval alchemists, the Gnostic rooster (Abraxos), a symbol of wisdom and vigilance, indicated the path towards self-knowledge.

The Clock Tower therefore embodies that medieval propensity for alchemy, symbol and mystery.

One should look closely at the image of the Pied Piper, a legendary character that came with the Saxons from medieval German folklore and imagery. It is a well-known story that connects Sighisoara and the burgs in Germany, sharing the same historical data, geographical and demographic characteristics. The legend of the Pied Piper tells that in 1284 there was a great invasion of mice in the German city of Hamelin. To get rid of this plague, the mayor of the city called an unusual character, dressed in motley clothes, a piper. His song gathered all the rodents in the city and drove them to the Wesser River where they drowned. As the elders of the town refused to pay him as agreed, the Pied Piper gathered this time all the children of the town by his enchanted song and disappeared with them into a cave in the mountain. On the other side of the mountains, the children arrived into a beautiful country, full of forests and green fields - Transylvania (tr. from Lat. "beyond the forests").

The story published by Grimm brothers in 1816, "The Pied Piper of Hamelin" (Figure 4), started from this popular legend of the Saxons. Collector of German fairy tales from the romantic era, pedagogue, philologist, priest and ethnographer, Joseph Haltrich from Sighisoara carried on a sustained correspondence with Jacob and

Wilhelm Grimm and effectively contributed to the popularization of the legend in the Transylvanian area (Haltrich, 1885).

Sighișoara, considered to be a unique complex of military, civil and ecclesiastical architecture, preserves intact objectives declared to be values of built heritage of national and international interest, located in the central area (Sighișoara Citadel) and in peripheral areas, in the archaeological sites.



**Figure 4.** The Pied Piper  
Source: author

## **2. Materials and methods**

### **2.1. General context**

In order to support the subject of this paper, a more in-depth study of the existing works with a historical, social and urban nature was needed. There was also necessary to broaden the reading of European studies about citadel cities and heritage sites. The tool used in this respect consisted in collecting information on the elements related to the habitability of the historical centers of the World Heritage, including data on the preservation of the tangible and intangible heritage of the site, as well as the relationship with the environment.

## 2.2. Working methodology

The methodology used to carry out this work is based on data triangulation by using knowledge of history, sociology, and environment. First of all, extensive archival research was necessary in order to achieve a correct contextualization in the absence of larger works concerning the built heritage in South-Eastern Europe. This involved consulting historical records, maps, and documents to trace the evolution of Sighisoara and its built environment.

A decisive factor in identifying the appropriate methods taken from examples of city-citadels in Central and Western Europe was the comparative analysis of similar and disjunctive elements between the city-citadels mostly in France and Germany, and Sighisoara, as the subject of the study. Key comparative parameters included architectural styles, fortification structures, and urban layouts. Articles and studies from European sources also provided material and solutions to correlate the intensive tourism practiced today with efforts to preserve heritage sites.

Moreover, field research and on-site observations were conducted in Sighisoara to document the current state of its heritage, including architectural details and the condition of its fortifications and towers. Interviews with local experts and concerned parties were also used to gain insight into current challenges related to conservation (Zhand et al. 2023) and tourism management.

This combination of historical, comparative, and field methodologies ensures a multidisciplinary approach, enriching the analysis and enabling a comprehensive understanding of the subject matter.

## 2.3. The relationship between heritage and tourism

The relationship between heritage and tourism cannot be anything else but complex. The two concepts have a symbiotic but also oppositional relationship. They complement and inter-relate in a relatively complicated synergy especially in the urban environment. The old medieval still inhabited fortresses and burghs, expanded and reorganized more or less chaotically over the centuries, are facing a general crisis of underlying identity. The mission of the city conductors would be to recreate a sense of belonging to the territory. Tourism could be one of the ways, but tourism alone does not solve an identity situation and there is a need for a real integration of the heritage space in the societal image of the region.

To a large extent, this is the main reason why the object of this paper is the city of Sighisoara, an old medieval center with a rich history, with urban elements that have evolved over time, developing adjacent residential areas and peripheral structures that are not necessarily in the spirit of the new sustainable urban approach (Liu and Wall, 2006).

## **2.4. Heritage preservation and sustainability**

In order to preserve areas of historical and cultural value and achieve a healthy symbiosis between built heritage elements and tourism-related activities, which can provide the necessary financial reserves, in addition to funding mechanisms at the national level and beyond, a more profound is needed, as well as a more sustained awareness raising activity for local residents and site staff, including targeted marketing specialists.

Specialized works and studies, developed by authorities competent in the matter, can provide essential elements and even possible solutions. Unfortunately, there is a rarefaction in the specialized literature in the country regarding the future of a medieval city under current conditions.

Materials published at international level have been consulted, with a main focus on Europe.

## **2.5. UNESCO World Heritage Convention**

The UNESCO World Heritage Convention comes to the rescue with tourism marketing strategies and programs that can be applied regionally, nationally and internationally in each country, taking into account the needs and capacities of the site and of the community.

Tourism, however, without being directly correlated with a policy of heritage protection and biodiversity conservation can negatively affect the future evolution of the community. UNESCO directives to provide local economic incentives for biodiversity conservation by strengthening local capacity to create community enterprises and jobs through training, technical assistance and support for entrepreneurs is one way forward (Poulios, 2010).

Which means the translation into reality of the concept of sustainability at the urban level and, in our case, at the level of a medieval fortress that wants a future (Turvey, 2019).

## **2.6. Urban sustainability and integration of global issues**

Local sustainability is defined by the integration of global issues, including climate issues, within territorial development. The complexity and originality of sustainable urban development policies reside in the adaptation of standards to these challenges. We believe that attempts to correlate the concept of the sustainable city with that of the quality of life reduce the true meaning of sustainability, limiting it to an older, important problem that does not necessarily require the concept of sustainability to be addressed. Today, the urban environment is globalized.

## 2.7. Biodiversity

In addition to the cultural value, taking into account today's aggressive tourism phenomenon, if we also take into account the study of the issue of biodiversity in the case of heritage cities, the ensemble picture becomes very complex.

Sighișoara is located on the Târnava Mare corridor, in an area with favourable landscape. The climate has a medium potential for the use of solar energy, and the forested area represents 46% of the territory.

Local biodiversity is protected by two sites of community importance, two avifaunistic protection areas and a mixed nature reserve.

The city benefits from an obvious natural advantage, that of being adjacent to a nature reserve: the Secular Oaks of Breite. By its origin, the Breite Plateau is a culturally modified forest, bearing the imprint of local Saxon tradition for over eight centuries. A legend says that the Saxons, upon their arrival in Transylvania, sowed the oak trees with seeds brought from their home areas. In fact, the forest predates the arrival of the Saxons by almost 300 years. The proof is the old hornbeams and oaks over 800 years old.

The Breite Plateau was gradually configured starting with the 12<sup>th</sup> century, when the Saxons settled in Sighișoara partially cleared the forest in the area, to create a suitable space for grazing pigs and cattle. Some trees have the venerable age of 400 to 600 years. This double origin gives the Breite reserve multiple historical, cultural, ecological, tourist values.

Both from the point of view of natural heritage and as a living testimony of the history of the region and the city of Sighișoara, Breite reserve brings added value to the region and represents, at the same time, a natural element of indisputable importance for Europe.

Only 15 minutes away from the city, the reserve is still within the peri-urban area of Sighișoara. The Breite oak forest remains an important point of tourist attraction in the area and an essential element in preserving the local biodiversity (Barton and Grant, 2006).

## 3. Results and discussions

This study highlights several important findings regarding the relationship between tourism, heritage preservation, and urban biodiversity in the medieval city of Sighișoara. First, intensive tourism significantly contributes to the local economy but has adverse effects on both cultural heritage and natural biodiversity. Overcrowding, aggressive commercialization, and insufficient maintenance of historic sites were identified as major threats to the sustainability of Sighișoara's heritage. Additionally, the study confirms that the polarized urban layout between the Citadel and the Lower Town exacerbates these challenges, creating a fragmented management framework.

Second, field observations and comparative analyses reveal the dual nature of tourism: while it provides resources for heritage conservation, it simultaneously increases the vulnerability of these resources to overuse and neglect. In particular, the built heritage suffers from structural degradation due to insufficiently regulated tourism activities, while urban biodiversity faces pressures from habitat disruption and urban sprawl.

These findings align with previous research emphasizing the complex interplay between heritage and tourism in heritage cities. However, this study expands on existing knowledge by incorporating the dimension of biodiversity, which is often overlooked in similar works. The results underscore the importance of integrating ecological considerations into heritage management frameworks to ensure long-term sustainability.

The implications of these findings extend beyond Sighisoara. They offer actionable insights for other inhabited medieval fortresses grappling with similar challenges across Europe. By promoting sustainable tourism practices, fostering community engagement, and integrating biodiversity into urban planning, heritage cities can achieve a balanced approach to tourism development and heritage preservation.

### **3.1. Importance of the study**

The importance of the work lies in identifying the problems generated by intensive and aggressive tourism on medieval inhabited cities, especially on Sighisoara, and finding ways to counteract the negative effects of overtourism. The excessive presence of tourists leads to congestion, excessive advertising, aggressive commercialization, and consequently a decrease in the quality of the touristic experience and the degradation of both natural and cultural resources. The study is based both on the consultation of specialized literature and relevant articles, as well as on the correlation of this information with a field study carried out in Sighisoara and Wangen im Allgäu.

### **3.2. Fulfillment of the objectives**

The work fulfills its objectives by analyzing and identifying the problems caused by intense and aggressive tourism on the built heritage of Sighisoara, especially on the medieval fortress, and by exploring possible applicable solutions.

- Issues identification: The work highlights the degradation of the heritage in the historic central area, caused by inadequate interventions, the precarious state of the buildings, the uncertainty of the property regime and the polarization between the Sighisoara Citadel and the Lower Town.

- Impact of tourism on built heritage: Preliminary empirical review revealed that tourism has both positive and negative effects on the cultural heritage. On one

hand it significantly contributes to the economy and on the other hand comes with challenges such as overcrowding and cultural commodification.

- Recommendations and viable solutions: The recommendations include the development of robust heritage management plans, enhanced visitor education, and community engagement. It is essential to encourage tourism diversification, the development of a sustainable infrastructure and marketing plans that promote cultural richness. This paper also proposes the development of an ecotourism concept that would reduce the pressure on the old built heritage.

Thus, the study focuses on the identified problems and proposes concrete measures for the preservation and valorization of the medieval heritage of Sighisoara, fulfilling the initial objectives.

### **3.3. Limitations**

Sighisoara, as an important cultural and historical landmark, faces significant challenges in preserving its heritage. The limitations related to the state of the buildings, the inadequate interventions and the polarization between the Sighișoara Citadel and the rest of the city underline the need for effective protection and promotion strategies. This creates difficulties regarding the access to facilities and contributes to a limited knowledge of cultural resources in the rest of the town.

The tourist attraction generates a seasonal agglomeration due to an inadequate decentralization of the touristic offer.

Furthermore, there is no formulation of detailed guidelines by interested parties regarding the implementation of the ICOMOS Principles to their specific circumstances or the requirements of particular organisations and communities. (ICOMOS International Committee on Cultural Tourism).

### **3.4. Future research directions**

Future research directions shall focus on developing solutions for heritage conservation and capitalization of cultural and natural assets in order to:

- achieve a harmonious balance between cultural heritage preservation and the economic benefits of tourism,
- ensure the long-term sustainability of both cultural heritage and economic benefits,
- develop and implement solutions for the conservation and rehabilitation of the built heritage,
- carry on studies on appropriate interventions in the central old area of Sighișoara,
- focus on the achievement of a beneficial interaction between the potentially conflicting expectations and aspirations of visitors and host,

- bring benefits to host communities and provide an important means and motivation for them to care for and maintain their heritage and cultural practices.

### **3.5. Urban transformation and the role of local management**

The morphology and organization of cities develop over time, being influenced by the actions of local actors who contribute to the transformation of territories.

Discussions with local authorities were essential for understanding the processes of construction and administration of social space. Therefore, a meeting with the mayor of Sighisoara was considered necessary. Mr. Iulian Sirbu was kind enough to present the long-term strategies developed and elaborated. Without these explanations, the transformations designed for a territory cannot be identified and the evolution of the urban space cannot be understood (Di Giovine, 2023).

A further discussion with Ms. Adina-Gabriela Popescu, former chief architect of Sighisoara Municipality, currently chief architect of Mureş County, led to a clearer picture of the concrete possibilities for the future transformation of the city on the banks of Târnava Mare into a highly attractive tourist destination, keeping the intrinsic value of the built heritage untouched.

People in the cities adapt their urban environment according to their needs and activities, making cities spaces where the human presence dominates, often to the detriment of other species with which they nevertheless share this environment.

### **3.6. Urbanization and the impact on biodiversity**

Transformations of the urban landscape contribute to the decline of biodiversity by homogenizing biological communities, affecting the experience of nature for city dwellers.

The city causes a disruption to ecosystems and poses a serious threat to biodiversity. In the current context of the accelerated artificialization of the land, the study of urban sprawl, the assessment and anticipation of its impact is of interest to both scientists and land managers.

The ubiquity of urban landscapes and changes in lifestyle are exacerbating this decline, a problem present in both ordinary cities and heritage sites or towns.

Sustainable cities automatically become "green cities", which require a radical change of life and a new understanding of the relationship with the environment.

Recent studies emphasize the need to rethink the city-nature relationship, as a basis for bringing back nature and biodiversity to the urban environment.

### **3.7. Sighisoara – short comparison study to other heritage cities**

As the subject of study is Sighisoara, a comparison with similar heritage cities in Europe, which have managed to adapt to intensive tourism and climate change, was considered appropriate.

A relevant example is the city of Wangen im Allgäu in Germany (Table 1).

The extremely fruitful discussions with the chief architect of the city of Wangen im Allgäu, Mr. Peter Ritter, have highlighted interesting initiatives referenced below.

The reasons for this choice are, by no means, obvious:

-Wangen im Allgäu, like Sighisoara, is a medieval European fortress still inhabited

- the historical, geographical and demographic characteristics make this city a comparable, relevant case, as shown in the table below (Table 1).

- the existing population in the two cities has a common origin.

Sighisoara was founded mostly by the Germanic population brought to Transylvania for the first time in the 12<sup>th</sup> century. In order to be stimulated to stay in place and found stable settlements thus developing the south of Transylvania, the Saxons received, through the Andrean Diploma, the privilege of owning the fundus regius (royal land), reinforced by the Golden Charter of the Transylvanian Saxons from 1224.

**Table 1.** Comparative table Sighisoara - Wangen im Allgäu

Cities	Founding year	Number of inhabitants	Altitude (m)	Surface (km <sup>2</sup> )	Water course with urban route
<b>Sighișoara</b>	Dec.14 <sup>th</sup> , 1280 (bearing this name since 1298)	33.200	380	96.02	Târnava Mare
<b>Wangen im Allgäu</b>	1281 (as a free town, under the present status)	27.232	556	101.28	Argen

Source: Wikipedia (2024)

We can go even further with the common characteristics of the two cities. In the 50s and then after 1980, the Saxons from Romania had the possibility of returning to Germany. As a result, in Wangen im Allgäu there are streets named after the region of origin, for example Banat Street.

One can add the common cultural elements, as well as the spoken language, with obvious modifications and alterations generated by the area and the population with which the Saxons came into intimate contact in the Transylvanian area. Therefore, a comparison between the two medieval cities is all the more appropriate.

In 2016, the more than 800-year-old Wangen im Allgäu was recognized as a promoter in the European campaign of transforming old and new cities into green, sustainable cities. It received a second European GOLD Certificate in 2021, which means that the city, once started on the path of transformation, found resources, ideas, built up projects to move forward.

In order to articulate the terms of a complex relationship between the old and the new, it is necessary to recalibrate urban public action according to the needs and requirements imposed by the new European norms, but also by the specific structure of the built heritage.

This year, Wangen im Allgäu hosts a vast garden exhibition, and to integrate the river that runs through the city into this effort to "green" the city, its banks have been rethought in a natural way (Figure 5).



**Figure 5.** Garden city, Wangen im Allgäu, 2024

Source: author

The same initiative applied to the Târnava Mare river would bring more touristic value to the city, but also a new vision on the integration of biodiversity in everyday life.

Here it is high time to remember the Green and Blue Network initiative as a network made up of terrestrial and aquatic ecological corridors, identified by regional ecological coherence and planning documents developed at the governmental level, by local authorities and competent bodies.

A green bridge over the river appears as a practical application of the idea defined above. The objective of these green passages/green bridges is to restore the connectivity of an ecological continuum by restoring biological and ecological corridors (Alvey, 2006). The adoption of green bridges as a strategy to mitigate the impact of civilization on the environment has proven that such structures can be successful in providing biodiversity benefits. Therefore, there are models to follow and adapt locally.

Being twinned with Sighisoara, the city of Blois (France) became a second choice. This medieval city is a relevant example, sharing elements of built heritage from the same medieval period as well as similar demographic and geographical data. The table below supports the above statements (Table 2).

**Table 2.** Comparative table Sighisoara-Blois

Cities	Founding year	Number of inhabitants	Altitude (m)	Surface (km <sup>2</sup> )	Water course with urban route
<b>Sighisoara</b>	Dec.14 <sup>th</sup> , 1280 (bearing this name since 1298)	33.200	380	96.02	Târnavă Mare
<b>Blois</b>	832 (integrated into the royal domain in 1397)	45 710	73	37.46	Loire

Source: Wikipedia (2024)

In 2000, Blois was included, along with the entire Loire Valley (Val-de-Loire), in the UNESCO heritage list. Since 1997, Blois has been declared a green city, with a program to reintegrate nature into the city and to restructure the touristic image as a whole, without affecting the built heritage.

This broad program, called Agenda 21, carries a significant motto: Agenda 21: «penser global, agir local» (think globally, act locally). Which means, in fact, the transformation of the old citadel into a resilient, modern city, open to the future. The formula "think globally, act locally", first used by René Dubos in 1977, then by Jacques Ellul in 1987, is often invoked in sustainable development issues. This means that considering environmental and social issues requires new heuristics that integrate the global nature of sustainable development.

Agenda 21 is a strategic project on adapting to global warming through vegetal solutions. The way to achieve this objective includes the preparation of identity cards per cadastral plot. Algorithmic reading of aerial photo pixels provides access to new diagnostics that open up new possibilities.

The discussions held, both in Sighisoara and in Wangen im Allgäu, also focused on green spaces as a key aspect for the sustainable management of historic, heritage cities, and the Miyawaki method seems perfectly suited to this purpose, as it makes the most of the existing empty spaces within the city structure.

Miyawaki micro-ecosystems have an interesting feature: they are self-maintaining. Miyawaki "pocket forests" are ideal for urban environments because they create dense, biodiverse mini-forests even on very small areas, contributing to the local health and well-being and reducing urban temperatures (Figure 6). Thus, small urban forests come to partially solve the problem of urban biodiversity and at the same time contribute to solving another major urban problem: high temperatures during the

summer. Urban mini-forests can lower summer temperatures in the city of Sighisoara by 4-8 degrees, according to specialized studies carried out at the UN level.



**Figure 6.** Aerial view of the residential area of Mazargues, Marseille, before and after mini-forestation

Source: <https://www.citeverte.com/dossiers/points-de-vue/detail/mazargues-une-foret-urbaine-au-coeur-de-marseille>

To what extent the city-citadel of Sighisoara, a site of world interest, part of the UNESCO World Heritage, can keep up with these extensive changes that are taking place in the common effort to preserve world values and to reconnect the urban environment with nature, i.e. to bring nature back in the city?

With European cities-citadels as models that have taken considerable steps onto this road towards sustainability and encouraging biodiversity, there are premises for Sighisoara, as shown above, to find the most appropriate formula to preserve heritage structures and meet the demands imposed by intensive tourism, but also to offer its inhabitants a healthy and sustainable living environment. It is not recommended to randomly intervene in the built heritage element and it is difficult to identify the right methods and solutions for a particular heritage site. But there is still the possibility to intelligently exploit the unused spaces, to rethink the existing parks, the areas adjacent to the Târnava Mare river and to transform them into oases of urban biodiversity (Adams and Hutton, 2007).

Examples of success from several medieval cities in Europe can be discussed at length.

We could mention the city of Strasbourg (France), which became a free imperial city in 1262. Strasbourg has long been known as a green city, with flowery bridges, well-kept banks and structured green areas. Since September 2020, Strasbourg has launched an extensive project to transform and preserve the green belt, a space that surrounds the city center with promenade areas, parks and gardens. The Green Belt/La Ceinture verte has the role of being a unifying and driving element in the city's

ecological transformation project, strengthening Strasbourg's status as a leader in urban ecology initiatives. It is not a recent project imposed by climate change, but it was initiated by a law passed by the mayor Jacques Peirottes in 1922, which supported the preservation of the former non-aedificandi zone of the city for the development of green spaces (Maes et al., 2015). The 1922 law stipulated that the area was to remain free of construction, with a few exceptions for social housing and facilities of public interest only (Figure 7).

As a result of local efforts to find and identify the best ways to adapt heritage cities, UNESCO launched in 2016 a global campaign to support world heritage in an era of great climate change (Naumov, 2016). This UNESCO report provides an overview of the increasing vulnerability of World Heritage sites due to the impact of climate change and the potential implications for global tourism. An uncontrolled or poorly managed tourist access, associated with other already existing stressors, is neither desirable nor favourable. On the other hand, tourism can play a positive and lasting role in ensuring the future of many World Heritage sites in a changing climate (Dumbraveanu, 2007).

The current period, strongly marked by global warming, calls into question the responsibility of residents and decision-makers regarding issues related to the sustainable development of a heritage city. For example, the regular maintenance of buildings by owners and/or tenants with the direct input of the authorities in the field, the choice of traditional materials in renovation or the attention paid to waste storage areas in neighborhoods are simple and sustainable solutions for the preservation of neighbourhoods in historic areas.

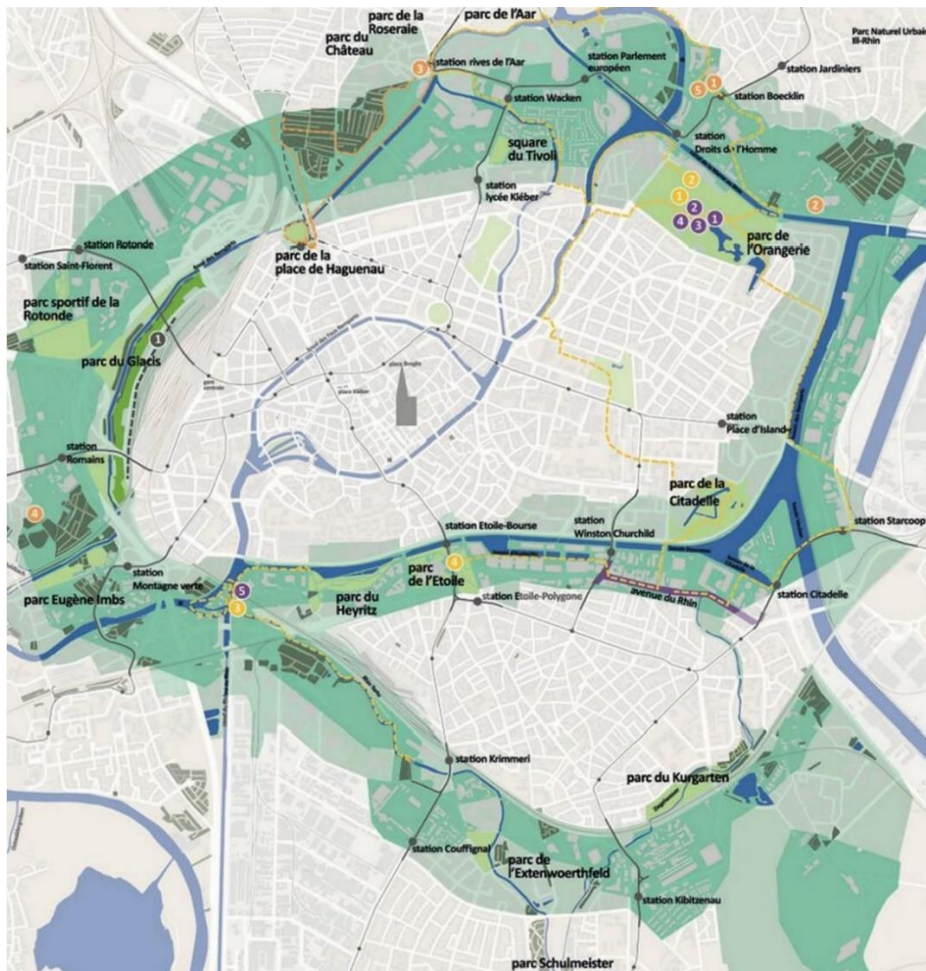
A viable solution in a medieval city might be the "albedo effect" with application both in the old and in the new districts of the town. The albedo effect is the ability of a surface to reflect solar energy. The use of traditional light-coloured materials have this characteristic.

And one should not forget the traffic, public or individual transport that must comply with modern rules of respect for the environment.

Civil society exploits heritage, a multilateral notion that oscillates between monuments and know-how, religious buildings and industrial buildings, nature, culture and tradition. It should not be forgotten that heritage represents a development vector (Mason, 2008).

It is essential that heritage continues to be considered a public good, even when it is privately owned.

Cultural properties, such as historic cities, retain their significance only as long as they are inhabited by local communities. That is why it is crucial to pay the same attention to local populations, whose interests must be at the center of development strategies and tourism support policies (Pisolkar, 2024).



**Figure 7.** Strasbourg, Ceinture verte, 2022

Source: [https://www.archi-wiki.org/Adresse:Ceinture\\_Verte\\_%28Strasbourg%29](https://www.archi-wiki.org/Adresse:Ceinture_Verte_%28Strasbourg%29)

There is a worldwide concern to preserve heritage, not only the built but also the natural one. The World Heritage Convention emphasizes the importance of Article 5a, which urges states parties to adopt general policies aimed at integrating natural and cultural heritage into the community life and include its protection within general development plans (Charola et al., 2002).

In essence, heritage represents a common good, which contributes to sustainable development both globally and locally. To manage this shared responsibility, the World Heritage Center promotes research and innovative solutions in property management and facilitates the exchange of best practices in this area (Tweed and Sutherland, 2007).

As a result, the urban dynamics of heritage preservation by focusing on the connections maintained by the inhabitants with the historical centers registered by

UNESCO, together with the empirical contributions of the professionals provide an additional perspective.

To establish a scientific basis for comparing Sighișoara with other European medieval cities, a structured approach involving clear and measurable criteria is necessary. This methodology focuses on several aspects approached as it follows.

### **Historical Context and Development**

Sighișoara was founded in the 12<sup>th</sup> century by Saxons who were granted privileges such as the *fundus regius*, similar to privileges enjoyed by settlers in other medieval towns like Blois, France, or Wangen im Allgäu, Germany. Blois and Sighișoara share the status of medieval cities with historical fortifications, while Wangen im Allgäu exhibits a strong connection to Germanic migration patterns.

Both Sighișoara and Blois are UNESCO-listed sites, reflecting their exceptional cultural and historical significance. In contrast, Wangen im Allgäu is not UNESCO-listed but demonstrates innovative efforts in sustainable urban development.

### **Urban Planning and Built Heritage**

The fortifications of Sighișoara (e.g., nine remaining towers) can be compared to the medieval defenses of Blois, where towers and castles serve as dominant historical markers.

Blois implemented the Agenda 21 program, blending historical preservation with urban modernization. Similarly, Sighișoara could benefit from adopting urban revitalization strategies such as the integration of green spaces and preservation of heritage sites.

### **Sustainability Initiatives**

Wangen im Allgäu has established itself as a pioneer in creating sustainable cities through projects like the European GOLD Certificates. Sighișoara could follow similar models, particularly the re-naturalization of the Târnava Mare riverbanks, which parallels Wangen's transformation of its riverbanks.

Blois has adopted green strategies like the *Ceinture Verte* (Green Belt), and Wangen has utilized natural methods to enhance urban biodiversity. Sighișoara could explore Miyawaki micro-ecosystems to transform unused urban spaces into biodiverse mini-forests.

### **Tourism and Heritage Management**

Sighișoara and Blois both face the challenge of balancing heritage conservation with tourism demands. Blois's focus on sustainable tourism through the Agenda 21 motto, "Think globally, act locally," is a valuable model for Sighișoara.

Sighișoara can learn from Strasbourg's implementation of partnerships for maintaining heritage through initiatives like the Green Belt. Public and private stakeholders in Blois and Strasbourg work collaboratively to enhance both tourism infrastructure and local involvement.

### **Socio-Cultural Dynamics**

The Saxon migration to Sighișoara and subsequent settlements, as seen in Wangen im Allgäu (e.g., Banat Street), highlight the cultural exchange and identity preservation. In both cases, the shared history strengthens the cultural ties between these cities.

Both Sighișoara and Wangen im Allgäu have preserved linguistic and cultural elements specific to Saxon heritage, although they have adapted over time due to local influences.

### **Future Urban Policies and Resilience**

Sighișoara can adopt resilience strategies modelled by Blois, such as addressing urban heat islands through the albedo effect and using traditional light-colored materials to reflect solar energy.

The sustainable transformation of Blois and Strasbourg demonstrates how medieval cities can modernize while preserving their heritage.

The comparison between Sighișoara and cities like Blois, Wangen im Allgäu, and Strasbourg highlights shared challenges and solutions in heritage preservation, sustainability, and urban development. Adopting successful strategies from these European counterparts can guide Sighișoara toward becoming a resilient, sustainable, and tourist-friendly city while preserving its unique historical identity.

## **Conclusions**

### **Identifying the main threats to heritage and rethinking policy**

The greatest danger to built or natural heritage is not time, but past and present human actions. Modernity, lacking measure and prudence, together with the poor adequate funding for research, endangers the biosphere and the preservation of historical monuments.

The identification and implementation of an appropriate policy for the rethinking of heritage spaces and their integration with the environment depends on the specific characteristics of each area and country.

### **Heritage, tourism and biodiversity – challenges**

World heritage cities face historical, sociological, geographical, tourism, environmental and media challenges, often caused by mass tourism. These challenges highlight the conflicts between intensive tourism and heritage spaces.

The present work is a case study with reference to the city of Sighisoara and highlighting the disjunctive elements that can appear in the relationship between mass tourism and the heritage space and the role it can play on a daily basis in contributing to local development.

In the particular case of the city of Sighișoara, the realization of a mapping project of the existing tourist resources and the creation of materials to popularize both the elements of built heritage and the way of including nature and biodiversity in the life of the city can be correlated with various applications/platforms promotion in this sense.

The conclusions to be drawn revealed that conservation groups see tourism as essential to the economic vitality of the historic area and to heritage preservation. However, the development of tourism in its current intensive and aggressive form poses a real danger to the authenticity of the historically and sometimes socially constructed heritage element.

## Perspectives

The paper contributes by identifying the possibilities of heritage management based on the experience of other similar European cities. The comparative study could be extended in the future to the analysis of several medieval cities inhabited today, facilitating the adaptation of intervention measures to the specific needs of each site.

There are already international norms and best practices for heritage management against intensive tourism, providing premises for preserving heritage cities and adapting them to environmental conditions without losing their intrinsic value and without affecting the evolution of biodiversity.

ICOMOS Charter supports wider international initiatives regarding the tourism industry in maintaining the integrity of heritage management and conservation.

## Disclosure statement

No potential conflict of interest was reported by the authors.

## ORCID

Gabriel Valentin Georgescu  0009-0009-8285-2154

## References

- Adams, W. M., & Hutton, J. M. (2007). People, Parks and Poverty: Political Ecology and Biodiversity Conservation. *Conservation and Society*, 5(2).
- Alvey, A. A. (2006). Promoting and preserving biodiversity in the urban forest. *Urban Forestry & Urban Greening*, 5(4), 195-201.
- Barton, H., & Grant, M. (2006). A health map for the local human habitat. *The Journal of the Royal Society for the Promotion of Health*, 126(6), 252-3.
- Charola, A. E., Henriques, F. M. A., & Jokilehto J. (2002). A History of Architectural Conservation. *Journal of the American Institute for Conservation*, 40(2), 150.

- Cristini, V., & Soriano, L. G. (2020). Villages with fortified churches in Transylvania: architecture, history and intangible culture. *The International Archives of the Photogrammetry Remote Sensing and Spatial Information Sciences XLIV-M-1-2020*, 249-254.
- Dragulescu, I. V., & Stanculescu, G. C. (2014). European Cultural and Touristic Heritage: Sighisoara vs. Verona. *Amfiteatru Economic* 16(Special Issue 8), 1160-1177.
- Dumbraveanu, D. (2007). Principles and practice of sustainable tourism planning. *Human Geographies* 1(1).
- Garrod, B., & Fyall, A. (2000). Managing Heritage Tourism. *Annals of Tourism Research* 27(3), 682-708.
- Graham, B., Ashworth, G.J., & Tunbridge, J.E. (2000). A Geography of Heritage: Power, Culture and Economy. *New Zealand Geographer* 56(2), 61-62.
- Hernandez, M.G., Vaquero, M.C., & Yubero C. (2017). Cultural Heritage and Urban Tourism: Historic City Centres under Pressure. *Sustainability* 9(8), 1346.
- Light, D. (2007). Dracula tourism in Romania: Cultural identity and the state. *Annals of Tourism Research* 34(3), 746-765.
- Liu, A., & Wall G. (2006). Planning tourism employment: A developing country perspective. *Tourism Management* 27(1), 159-170.
- Maes, J., Barbosa, A. L., Baranzelli, C., & Zulian G. (2015). More green infrastructure is required to maintain ecosystem services under current trends in land-use change in Europe. *Landscape Ecology*, 30(3), 517-534.
- Mason, R. (2008). Be Interested and Beware: Joining Economic Valuation and Heritage Conservation. *International of Heritage Studies*, 14(4), 303-318.
- Mayo, J. M., Boyer, M. C., & Barna, J. W. (1996). The City of Collective Memory: Its Historical Imagery and Architectural Entertainments. *Journal of Architectural Education*, 50(1), 68.
- Naumov, N. (2016). Cultural Tourism. *European Journal of Tourism Hospitality and Recreation*, 7(1).
- Pisolkar, Y. (2024). Cultural Heritage Management and Sustainable Development: Major Themes and Research Trajectories. *Journal of Electrical Systems*, 20(6s), 2417-2431.
- Pop, R. (2019). Sibiu and the Urban of Transylvania in the 18th century. Brukenthal. *Acta Musei*, X(1), 125-130.
- Poulios, I. (2010). Moving Beyond a Values-Based Approach to Heritage Conservation. *Conservation and Management of Archaeological Sites*, 12(2), 170-185.
- Russo, A. P., & Borg, J. (2002). Planning considerations for cultural tourism: A case study of four European cities. *Tourism Management*, 23(6), 631-637.
- Rusu, C. C. (2023) Researching Everyday Life in the Main Urban Centres of Late Medieval Transylvania. The Model of Transylvanian Cities of German Foundation and Tradition. *Studia Universitatis Babes-Bolyai*, 68(2), 3-28.
- Smith, M. L. (2014). The Archaeology of Urban Landscapes. *Annual Review of Anthropology*, 43(1), 307-323.
- Timothy, D. J., & Boyd, S. W. (2006). Heritage Tourism in the 21st Century: Valued Traditions and New Perspectives. *Journal of Heritage Tourism*, 1(1), 1-16.
- Turvey, R. (2019). Urban planning and sustainable cities. *International Journal of Sustainable Society*, 11(3), 139-161.
- Tweed, C., & Sutherland, M. (2007). Built cultural heritage and sustainable urban development. *Landscape and Urban Planning*, 83(1), 62-69.
- Quinn, B. (2002). The tourist-historic city, retrospect and prospect of managing the heritage city. *International Journal of Tourism Research*, 4(6), 482-483.