UNIVERSITY OF LJUBLJANA
SCHOOL OF ECONOMICS AND BUSINESS

MASTER'S THESIS

MONITORING THE NEGATIVE TOURISM IMPACTS ON THE PRESERVATION OF PLEČNIK'S CULTURAL HERITAGE

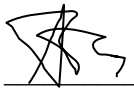
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ABSTRACT

Cultural heritage (CH) is being considered worldwide as a potential agent for sustainable development; this serves to enhance quality of life and create prosperity, among other roles, in direct correlation with the United Nation's (UN's) Sustainable Development Goals (SDGs), particularly 11.4. Tourism has then become an instrument for translating those benefits into actual gains, only that stronger tourism ironically brings with it adverse effects such as physical degradation, social disruptions, and overtourism that can compromise the integrity of heritage sites. This problem is most prominent with "The Works of Jože Plečnik in Ljubljana – Human Centered Urban Design", a UNESCO World Heritage Site noted for its one-of-a-kind urban identity. The absence of a systematic tourism pressure-monitoring-and-management system leaves this priceless heritage in jeopardy.

The qualitative research method meets these aims. The study commences with an extended review of the literature to identify an initial list of 15-20 social, economic, and environmental metrics, as well as to study management practices in comparable heritage destinations. Then, six semi-structured, in-depth interviews were conducted among relevant and diverse groups of key stakeholders, including a curator at Plečnik House, the Head of Conservation Services at Museums and Galleries of Ljubljana, a conservation advisor at the Slovenian Tourist Board, a project manager for cultural tourism at the Institute for the Protection of Cultural Heritage of Slovenia, a project manager at Tourism Ljubljana, and a world heritage and architecture specialist at the Museum of Architecture and Design (MAO). The interviews yield qualitative data, offering new insights on Plečnik's cultural heritage in Ljubljana. The thematic analysis of all findings was conducted by the researcher, while SAI tools were used solely as a supportive instrument.

The anticipated result of this study lies in the development of an adaptive monitoring framework tailor-made for Plečnik's heritage, with a set of Key Performance Indicators (KPIs). This framework forms the foundation for the second major deliverable, the strategic action plan that contains concrete action recommendations for heritage managers and policymakers. This thesis will facilitate an actual contribution toward balancing tourism as an economic capital for the preservation of cultural capital of a major UNESCO World Heritage site. The proposed framework and action plan might also serve as a replicable model for other cultural heritage sites facing the same pressures of tourism.

Keywords: Cultural Heritage, Plečnik's Ljubljana, Sustainable Tourism, Overtourism, Impact Monitoring, Key Performance Indicators, UNESCO World Heritage, Stakeholder Perception, Sustainable Development Goals, Attributes, Values.

Sustainable Development Goals (SDGs): SDG 11 (Sustainable cities and communities – Target 11.4: Protect and safeguard the world's cultural and natural heritage).

POVZETEK

Magistrsko delo obravnava izzive ohranjanja kulturne dediščine v luči naraščajočega turističnega povpraševanja. To služi izboljšanju kakovosti življenja in ustvarjanju blaginje, med drugimi vlogami, v neposredni korelaciji s cilji trajnostnega razvoja Združenih narodov (ZN), zlasti s ciljem 11.4. Osrednji predmet raziskave so negativni vplivi turizma na Plečnikovo kulturno dediščino v Ljubljani. Obsežen pregled literature vključuje analizo primerljivih destinacij na Unescovem seznamu svetovne dediščine, pri čemer intervjuji s strokovnjaki razkrivajo tako primere dobrih praks, ki služijo kot pozitiven zgled (benchmark), kot tudi lekcije o napakah, ki se jim je treba izogniti. Plečnikova Ljubljana, vpisana na Unescov seznam leta 2021, se sooča z izzivom usklajevanja izjemne univerzalne vrednosti z nujnostjo ohranjanja družbeno-kulturne, okoljske in gospodarske integritete.

Raziskava temelji na primerjavi pridobljenih ugotovitev iz šestih polstrukturiranih globinskih intervjujev z obstoječo strokovno literaturo. Rezultati opozarjajo na aktualno problematiko izključevanja lokalnih prebivalcev iz osrednjih območij mesta ter na intenzivno komercializacijo zaščitenih in vplivnih (buffer) območij. Identificirane so bile kritične točke, kot so vizualno onesnaženje, prostorska prezasedenost središča in pomanjkanje medinstitucionalne usklajenosti, ki vodijo k tveganju muzejfikacije mestnega jedra. Magistrsko delo prinaša nove vpoglede in konkretne priložnosti za prihodnji razvoj, ki so tesno usklajeni z razvojno vizijo Zelene Ljubljane kot butične in trajnostne destinacije.

Na podlagi teh dognanj so bili oblikovani ključni kazalniki uspešnosti (KPI) za spremljanje vplivov turizma, ki služijo kot strokovna podlaga za boljše upravljanje. Delo tako prispeva k praktičnemu reševanju konflikta med turističnim razvojem in varstvom dediščine ter ponuja akcijski načrt za dolgoročno odgovorno upravljanje prostora, ki zagotavlja kakovost življenja tako obiskovalcem kot lokalnim prebivalcem.

Ključne besede: Plečnikova Ljubljana, kulturna dediščina, UNESCO, trajnostni turizem, zelena agenda, upravljanje turističnih tokov, KPI, komercializacija, lokalno prebivalstvo, spremljanje vplivov, atributi, vrednosti, cilji trajnostnega razvoja.

Cilji trajnostnega razvoja (SDGs): SDG 11 (Trajnostna mesta in skupnosti – Cilj 11.4: Okrepiti prizadevanja za zaščito in varovanje svetovne kulturne in naravne dediščine).

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LIST OF ABBREVIATIONS

AI – Artificial Intelligence

AR – Augmented Reality

CEM – Conference and Exibition for Emissions and Air Quality Monitoring

CH –Cultural Heritage

CHSs –Cultural Heritage Sites

DMOs –Destination management organizations

EENCA –European Expert Network on Culture and Audiovisual

EIB – European Investment Bank

ESRC – Economic and Social Research Council

EU –European Union

GDP – Gross Domestic Product

GHGs – Green House Gass Emissions

GIS – Geographic Information System

HCUD – Human Centered Urban Design

ICOMOS – International Council on Monuments and Sites

ICCT – International Committee on Cultural Tourism

IoT – Internet of Things

IPCHS –The Institute for the Protection of Cultural Heritage

KPIs –Key Performance Indicators

LBR – Local Benefit Rate

LBR – Local Benefit Rate

LPD – Land Price Differential

MAO –Museum for Architecture and Design

MGML –Museum and Galleries of Ljubljana

NDT – Noise Disturbance Treshold

NUK –National University Library

OUV –Outstanding Universal Value

SDGs –Sustainable Development Goals

SRM – Standard Reference Method

STO –Slovenian Tourist Board

TCCI – Tourism Carrying Capacity Indicators

UN – United Nations

UNESCO –United Nations Educational, Scientific and Cultural Organization

VR – Virtual Reality

WH – World Heritage

ZVKDS –Zavod za Varstvo Kulturne Dediščine Slovenije

1 INTRODUCTION

Cultural heritage (CH) is a powerful driving force for economic development, job creation, and fostering social cohesion. By elevating the quality of life, supporting well-being, directly and indirectly contributing to Gross Domestic Product (GDP) growth, it promotes sustainable tourism by revitalizing urban and rural areas (European Commission, 2024). Because cultural heritage sites (CHSs) are common resources, comprehensive governance and enjoyment of these common resources entail shared rights and responsibilities of a variety of stakeholders and communities. If managed responsibly, cultural heritage tourism can contribute to the sustainable development of those sites (International Council on Monuments and Sites, International Committee on Cultural Tourism [ICOMOS-ICTC], 2022).

Worldwide, especially in Europe, CH and its importance for a sustainable future is gaining increasing recognition from researchers and policymakers. Protection and preservation of these sites are fundamental to achieving the 2030 Sustainable Development Goals (SDGs), especially Goal 11.4, which specifically highlights CH as crucial for a sustainable and equitable future. CH also supports other SDGs, including Goal 3: Health and well-being, Goal 4: Quality education, Goal 9: Industry, innovation, and infrastructure, Goal 10: Reducing inequality, and Goal 13: Climate action. Furthermore, as reflected in the New Urban Agenda – Habitat III (2016), CH encourages social cohesion, inclusive development, and balanced economic growth. The The United Nations Educational, Scientific and Cultural Organization (UNESCO) Culture for 2030 Agenda (2018) emphasizes the need to preserve cultural values and identities, urging UN Member States to integrate culture into policies on sustainable tourism and the cultural and creative industries (United Nations, n.d.).

In 2021, the G20 culture ministers adopted the Rome Declaration, in which they identified creative industries and culture as crucial for post-pandemic recovery and social regeneration, with CH at the core (G20 Culture Ministers, 2021). Research in this field is foundational for future actions. European strategies strongly support this direction. Cultural heritage is integrated into post-pandemic recovery plans, with the EU offering funding, policy support, and expert recommendations. Notably, the Council of Europe's Strategy 21 (2017) aims to transform the heritage sector for competitiveness while preserving CH as a cornerstone of European identity and diversity (Council of Europe, 2017). The 2017 Eurobarometer underscores this public support: 84% of Europeans consider cultural heritage personally important, and 79% see it as key to job creation in the EU (European Commission, 2017).

In spite of the numerous positive impacts that tourism has on cultural heritage sites, it also causes the negative impacts. The intensified utilization of cultural heritage destinations by tourism has triggered concern in relation to its negative impacts on these sites. As a result,

this can lead to degradation of cultural heritage, producing adverse consequences across the social, economic, and environmental pillars (ICOMOS-ICTC, 2022).It is essential to identify carrying capacities in order to mitigate negative tourism impacts. This has brought the concept of overtourism to the forefront. Overtourism is one of the most prominent negative tourism impacts that affects social, economic and environmental pillars. It is linked to mass tourism, and joined with promotion, leads to gentrification with numerous consequences, such as compromising local communities, risk for cultural heritage sites and physical degradation (International Council on Monuments and Sites, International Committee on Cultural Tourism [ICOMOS-ICTC], 2022).

This thesis focuses on the urban legacy of architect Jože Plečnik in Ljubljana, and explores the challenges in real-world context. In the period between the two World Wars, Jože Plečnik (1872–1957) transformed Ljubljana from a provincial town into a national capital by creating a new urban design. In alignment with his unique vision, the famous architect redesigned the city's public spaces to create an urban environment that prioritized the needs of its modern inhabitants. Everyone has the right to enjoy cultural heritage, but that right comes with a responsibility to respect and protect it. To preserve it for future generations, it is essential to appreciate its universal importance and unique local value (Visit Ljubljana, n.d.).

Plečnik's urban vision was based on the existing cityscape of Ljubljana, designing an urban network along two major axes: the land axis and the water axis. The land axis outlines the Green Promenade from Trnovo Bridge to Congress Square. Parallel to the land axis is the water axis, which consists of a pedestrian promenade that runs along the Ljubljanica River from the Trnovo district to the Sluice Gate. The network connects the historic center with the peripheral areas and major cultural landmarks, including the Church of St. Michael, the Church of St. Francis of Assisi, and Plečnik's Žale Cemetery (UNESCO, 2021).

The title "The works of Jože Plečnik in Ljubljana – Human Centered Urban Design" refers to the entire collection of Plečnik's works that was officially recognized in the UNESCO World Heritage List on the July 31, 2021 (UNESCO, 2021). The urban design of "Plečnik's Ljubljana" is "an exceptional case of creating public spaces, buildings and green areas within a limited time, space, and with modest means according to the vision of a single architect" (UNESCO, 2021, para. 3). The SWOT analysis, included in the nomination document, revealed a significant weakness, identified as "no management plan 57%", and as threats "exposure to vandalism 71%", "lack of awareness among owners and managers about the importance of heritage, as shown by reconstruction work on properties 68%" and "too many tourists who could endanger the normal course of original activities 63%" (Republic of Slovenia, 2021, p. 180).

This thesis focuses on negative impacts of tourism on "Plečnik's Ljubljana". As a part of UNESCO World Heritage Site List, "Plečnik's Ljubljana" is among the most pivotal

cultural achievements of the 20th century (Visit Ljubljana, n.d.). To effectively address negative tourism impacts on CH, this study provides valuable and evidence-based guidance. This is achieved through the systematic understanding of perceived impacts, the identification of relevant Key Performance Indicators (KPIs), the proposal of a benchmarking-informed monitoring framework, and the formulation of an action plan with practical recommendations for reduction of negative impacts. Addressing threats is crucial for achieving global sustainability objectives, which is directly aligned with United Nations SDG Target 11.4, enhancing measures for the comprehensive protection and preservation of international cultural and natural sites. Therefore, it is vital to establish effective strategies for control and impact reduction to fulfill this critical global agenda (United Nations, 2015).

The objective of this thesis is to develop a practical framework for monitoring tourism impacts on Plečnik's cultural heritage in Ljubljana, to deliver a blueprint for mitigating negative effects, and to contribute to the long-term sustainability of these cultural heritage sites. This is achieved through the analysis of other similar UNESCO cultural heritage sites, insights that derive from the interviewed experts and the application of these results as a benchmark for mitigating negative effects of tourism in the case of "Plečnik's Ljubljana".

This thesis addresses the following research questions:

How do stakeholders perceive the impacts of tourism on Plečnik's cultural heritage sites, and what additional KPIs seem relevant for monitoring those impacts within a local context?

What examples of effective tourism impacts monitoring tools and management practices from other similar UNESCO World Heritage sites can serve as benchmark for developing a monitoring system for Plečnik's heritage?

What Key Performance Indicators (KPIs) should be defined to monitor the negative impacts of tourism on cultural heritage site?

What recommendations and strategies can be formulated for an action plan with the goal to mitigate negative tourism impacts on Plečnik's cultural heritage in Ljubljana?

Research commences with secondary data collection, which is based on an extensive review of existing literature. This provides a deeper understanding of specific issues, common challenges and problems of similar sites and enables the identification of KPIs that are relevant for the preservation of cultural heritage sites.

Further, this study utilizes a qualitative method to explore diverse impacts of tourism on the preservation of Plečnik's cultural heritage sites, primarily those under the UNESCO protection. An exploratory qualitative design was employed and qualitative data were

collected through 6 semi-structured, in-depth interviews. Primary data collection involves semi-structured, in-depth interviews with key stakeholders (tour operators, tourism businesses, destination managers and marketing organizations, site management authorities, heritage and tourism professionals) in order to explore their perspective of tourism impact on the economic, social and environmental pillars of Plečnik's cultural heritage sites (International Council on Monuments and Sites, International Committee on Cultural Tourism [ICOMOS-ICTC], 2022). In-depth interviews explore new, context-specific KPIs and issues that were not anticipated before. Interviewees were selected based on non-probability sampling and purposive technique (on the basis of the membership in the key stakeholders group). The qualitative data from interviews undergoes thematic analysis, using AI tools (ChatGPT) solely as a supportive instrument. Following ethical principles, this study secures informed consent and maintains participant confidentiality and anonymity.

This thesis is divided into five main chapters. Following the Introduction, Chapter 2 presents a comprehensive literature review. Chapter 3 outlines the research methodology, including the approach, data collection, and analysis. Chapter 4 presents and discusses the results and findings of the study, while Chapter 5 addresses the research questions and connects findings with existing literature, Chapter 6 represents the conclusion and proposes a monitoring framework and action plan.

2 LITERATURE REVIEW

This chapter provides extensive and critical review of relevant literature. It proceeds from a broad discussion of global cultural heritage and tourism to a specific analysis of the challenges facing Plečnik's Ljubljana, essentially identifying the tools and practices required to address these issues.

2.1 The global context of Cultural heritage and Sustainable tourism

Cultural heritage is identified as inseparable from sustainable tourism development and as a key component of the SDGs and various EU policy directives. It is a driver of sustainable development and this has been globally recognized by major cultural heritage organizations and policy bodies, stressing the need for evidence-based research (Cultural Heritage Counts for Europe [CHCfE] Consortium, 2015). It is necessary that cultural heritage management plans include tourism sustainability and visitor management strategies (ICOMOS & ICTC, 2022).

2.1.1 CH: Importance and value

Cultural heritage includes tangible and intangible assets, incorporating physical sites, objects, memories, and traditions. These elements are often interconnected, with intangible practices taking place at tangible locations. The core component of individual and communal identity lies precisely in this dualistic nature of heritage. For example, the traditions of Aboriginal groups in Australia are deeply integrated with the physical landscape, illustrating how practices and places are fundamentally linked (Blue Shield International, n.d.). Cultural and natural heritage contributes to our lives, with its value being accessible through direct, in-person engagement and modern digital platforms (UNESCO, 2022).

Parallel with its economic benefits, CH plays a significant role in fostering public health and societal well-being. The project "Give: Volunteering for Wellbeing" was designed as an initiative to elevate heritage accessibility for communities facing health inequality. The program connects people through volunteerism, and uses museum collections to support personal wellness and build community harmony. In the end, this initiative highlights the capacity of heritage institutions to serve as catalysts for positive social change (National Alliance for Museums, Health and Wellbeing, n.d.).

In the modern context, sustainable development is an integral part of almost all economic activities, many policies, and EU directives. Cultural heritage plays a significant role in the tourism product. It is important that CH is viewed as essential for fostering sustainable peace and development, because it not only contains the identity of specific nation and area but contributes to the social equity and well-being (UN Human Rights Office of the High

Commissioner, n.d.). Therefore, cultural heritage is very important for understanding humanity (Blue Shield International, n.d.). The United Nations Brundtland Commission (WCED, 1987) defined sustainability as the idea and necessity that activities we take now do not undermine the capability of the generations in the future to meet their own needs. It is obligatory that cultural heritage sites are preserved. Erosion of tangible or intangible cultural heritage would mean the lost opportunity for future generations to enjoy and learn from past, which would result in loss of our collective identity (Blue Shield International, n.d.).

Since the major part of the world's population resides in the cities, accomplishing the goals of the 2030 Agenda focuses on the sustainability of urban areas, as specified in SDG 11. For developing the five pillars of the SDGs—people, planet, prosperity, peace, and partnerships—with cultural heritage, cities are key points. Target 11.4 dictates the protection of global cultural and natural heritage in order to achieve sustainability and resilience of urban areas (UNESCO Institute for Statistics, 2023). The 2021 G20 Rome Leaders' Declaration strongly supports and recognizes culture as a key "driver for sustainable development" that plays a vital role in the regeneration of economies. This very important document builds agreement that protecting cultural heritage is a number one priority (Group of Twenty, 2021).

Cultural heritage and creative industries represent immense economic value in the global context, and they have become a major force in the global economy, providing a crucial factor for inclusive economic growth and social development. With a global value of approximately US$4.3 trillion, the sector generates over 30 million jobs worldwide, with a notable impact on employment for individuals aged 15 to 29. These industries have an important role in reducing inequalities, and advancing the goals of the 2030 Sustainable Development Agenda (UNESCO, n.d.).

2.1.2 The rise of Cultural Heritage

Cultural heritage has been evolving through history. The modern concept of cultural heritage has emerged due to complex and continuous development over time, and the related change in the value of monuments, buildings, and artifacts. Terms like "outstanding universal value" and the idea that heritage belongs to "humanity" perfectly reflect how CHSs are of a unique and indispensable value. This necessitated organized protection and conservation of these sites (Central European University [CEU], n.d.).

The first examples of establishing formal structures for heritage preservation were the collections of artworks and cultural artifacts from the Late Medieval and Early Modern periods. They included rare and aesthetically valuable objects, and were motivated by the desire to display new knowledge to the world. National heritage as a concept led to the establishment of national museums and institutions for monument protection in the 19th century. Subsequently, in the 20th century, the international organization UNESCO was

established. This organization was created with the explicit goal of securing support for the preservation of cultural heritage across the globe, ensuring that CHSs belong to all of humanity (CEU, n.d.).

Cultural heritage as the basis of common European identity cultivates social cohesion and democratic principles. Given the diverse European identity and the EU's economic health, the protection of CHSs must be a priority. Local and regional initiatives must be recognized and supported, while also making room for new ones to be developed and implemented (European Movement International, 2021).

A study conducted on cultural heritage in Greece in 2024 demonstrates that cultural heritage assets significantly contribute to economic growth at a regional level. This finding highlights how heritage, along with factors like physical capital and employment, has a substantial and measurable positive impact on a country's income. The study also established a one-way causal link showing that cultural heritage and physical capital directly influence economic growth. Additionally, it found a two-way causal relationship between unemployment and income (Proietti et al., 2024).

Cultural heritage is viewed as a way to preserve a nation's identity, and if managed correctly, tourism can be beneficial in cultural heritage preservation (Silva & Henriques, 2021). Despite the economic benefits that cultural heritage sites can create, the issue of overcrowding can lead to several negative outcomes. These include heavy visitor traffic and congestion, which can physically harm cultural assets. A high volume of visitors may also reduce the authenticity and symbolic value of sites, which are essential to a community's identity. Furthermore, this heavy visitation can strain local infrastructure, increase maintenance costs, and inflate housing prices, placing a significant burden on residents (Cerisola & Panzera, 2024).

2.1.3 The role of UNESCO World Heritage Sites

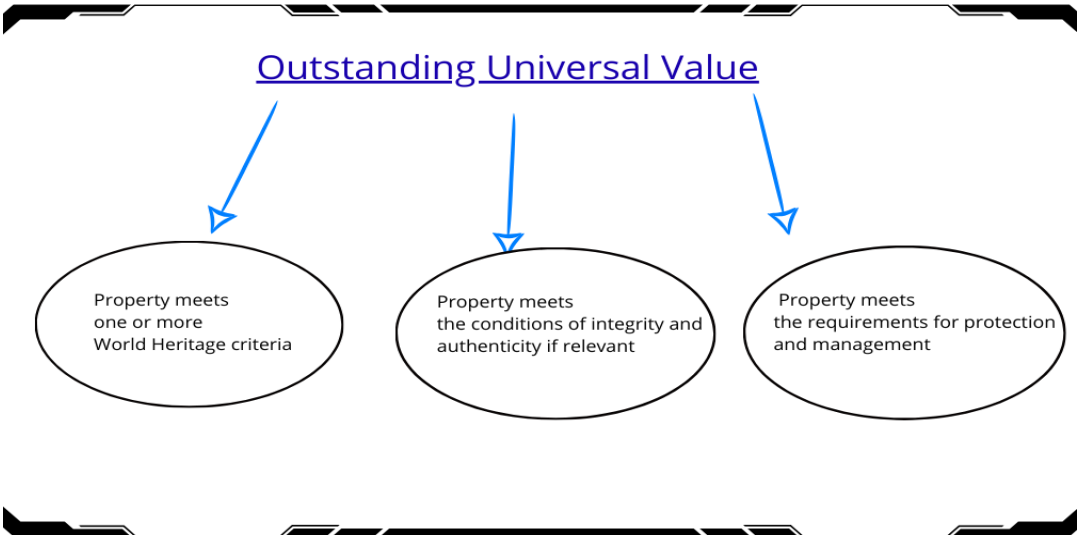
UNESCO was established in 1945 with the main objective of using education, science, and culture as a tool for building a culture of peace. In the context of the post-war period, this crucial step resulted in the continuous development of national strategies and initiatives through various programs, with a focus on cultural heritage, which is viewed as fundamental for maintaining and strengthening national identity, belonging, and the capacity to learn from the past (UNESCO, n.d.).

The role of UNESCO in the field of cultural heritage preservation, protection, conservation, presentation, and transmission to future generations is vital. The 1972 UNESCO World Heritage Convention was held in Paris, where the definition of cultural and natural heritage was established. Moreover, it required guidance, protection, and prevention of deterioration for all cultural heritage sites worldwide. In its articles, there are defined guidelines and obligations for each State Party to the Convention all with the goal

to preserve heritage for future generations. The World Heritage List is a list of properties of Outstanding Universal Value (OUV) which includes sites that meet necessary criteria that were established by the organization, and each two years the list is updated (UNESCO World Heritage Centre, n.d).

In order to understand the international role of UNESCO in the field of cultural heritage protection, it is fundamental to describe the concept of Outstanding Universal Value. OUV means that a cultural or natural heritage possesses such an extraordinary value that it transcends national boundaries. As such, it is considered of common importance for all of humanity, including future generations. This implies that such heritage is a world priority when it comes to protection (UNESCO, n.d.).

Figure 1: Becoming World Heritage



Source. Own work based on Wadden Sea World Heritage (n.d.)

Despite the fact that UNESCO is focused on protection and preservation of cultural heritage sites, it is also true that these sites carry a burden of numerous problems regarding sustainable tourism. CHSs attract a high volume of visitors that often cause physical wear and tear (Shaheen et al., 2024).

2.2 Positive and negative impacts of tourism on Cultural Heritage

Cultural heritage attracts tourists from all over the world, which increases the visibility and the tourism-related pressures. Data from 2015 showed that cultural tourism represented 40% of European tourism, and this interest comes with increased risk and threat to the conservation of these sites (Silva & Henriques, 2021). This visitation not only boosts the economy but also, as a direct consequence, provides essential funds for the preservation and protection of CHSs. Cultural tourism development creates a cycle of attracting visitors and improving the site's popularity and economic growth, which simultaneously

strengthens the feeling of belonging among the local population (Cerisola & Panzera, 2024).

On the other hand, tourism development has led to numerous issues due to over-commercialization. Physical deterioration of valuable cultural heritage sites and the neglect of preservation and repair needs combine to cause severe problems for local residents (Grah et al., 2020). The UNESCO report from 2016 emphasizes that World Heritage sites are highly vulnerable to climate change, while an increasing number of tourists contributes to greenhouse gas emissions (GHGs). However, if managed sustainably, these sites can play a role in mitigating negative environmental impacts (Markham et al., 2016).

Impacts of tourism on the economic, social and environmental pillars of cultural heritage sites will be explained in this chapter.

2.2.1 Economic impacts of tourism on Cultural heritage

The focus of this section is to examine how tourism impacts funding, conservation, management, and economic pressures on cultural heritage sites.

Cultural heritage sites depend on tourism-related income. Tourism has a dual nature. While it contributes to the economy, at the same time it can create economic pressures. It considerably facilitates the long-term financial health of cultural heritage sites. The surge of visitors creates revenues through guided tours, entry fees, souvenir expenditure, and local tourism hospitality services. Travel revenues represent an important part of funding aimed at preservation, conservation, restoration, and maintenance of cultural heritage sites. Tourism related to cultural heritage creates job opportunities (in hospitality, transportation, cultural performances, handmade merchandise, etc.). It boosts the demand for tourism-related services in the buffer zones around the heritage sites (Gautam et al., 2023).

Besides revenues that are generated directly from tourism, funding for heritage preservation can emerge through: sponsorships, public-private partnerships or private donations.

The UNESCO report from 2016 highlights examples of cultural heritage sites in Tanzania (Kilwa Kisiwani and Songo Mnara cities) which attract increasing number of visitors and contribute to national tourism economy. Tourism in this region accounts for approximately 14% of GDP. The same report also refers to the Statue of Liberty National Monument, which in 2011 received around 3.7 million visitors, supported approximately 2200 jobs, and generated US$174 million into the economies of New York and New Jersey. This report indicates that there is a growing trend of tourist numbers in this cultural heritage site (Markham et al., 2016).

Seasonality is the phenomenon that most destinations are affected by and brings with it problems such as: high prices, overcrowding, the shortage of job opportunities and unemployment in low and shoulder seasons. Seasonality can also affect cultural heritage sites, since unstable tourism flows and irregular income affect the conservation and maintenance of these properties (UNWTO, n.d.).

Overtourism is defined as an excessive number of visitors, especially during peak seasons, creating touristic hotspots, and it impacts cultural heritage on all three pillars (economic, socio-cultural, and environmental). In cultural heritage sites located in historic urban areas (such as Venice, Amsterdam, Barcelona, Rome, Paris) overtourism can inflate housing prices and rentals, leading to gentrification. This phenomenon reduces the residential character of cultural heritage areas and can disrupt socio-economic structure (Suyadnya, 2021).

Developing tourism comes with a high opportunity cost. Although tourism can create gains and spillover effects for the economy, it can also redirect resources towards tourism development, which then reduces availability of these resources for other sectors, including cultural heritage preservation and management. There is an economic loss somewhere else, since the resources from those places (materials, labor force, etc.) were moved and used for tourism development (Faber & Gaubert, 2019, p. 2245).

Empirical research showed that tourism-induced inflation is reality for many countries that are developing tourism, therefore it is necessary that governments strictly control the pace of the industry's growth (Shaari et al., 2018). Another empirical research finding says that destinations that are heavily dependent on tourism as an economic sector have the economy that is deeply vulnerable, including cultural heritage sites that rely purely on tourism income for their conservation and maintenance (Scheyvens, 2011, p. 161).

2.2.2 Socio-cultural impacts of tourism on Cultural heritage

Socio-cultural impacts of tourism on CHSs can be defined as: "The ways in which tourism is contributing to changes in value systems, individual behavior, family relationships, collective lifestyles, moral conduct, creative expressions, traditional ceremonies, and community organization" (Pizam & Milman, 1986, p. 29, as cited in Akova & Atsız, 2019). Tourism could be a tool for the preservation of these sites, or risk of cultural erosion.

The conservation of cultural heritage sites is crucial for maintaining the local identity. The research conducted on the Penglipuran Village in Bali revealed that despite cultural tourism being a significant part of Bali's tourism, the increased tourism development has raised concerns that it can endanger the preservation of local traditions. But tourism development has to be managed carefully to prevent commodification of culture. The local community needs to be involved into the preservation activities, through education,

planning, increased awareness of the importance of the cultural heritage, which can mitigate the commercialization of these sites and cultural erosion, and instead – to use tourism as a tool for promoting the site. Residents can participate in shaping tourism practices that they see in alignment with their cultural heritage and traditions. Maintaining the original cultural elements attracts more tourists (Surata et al., 2024).

Cultural heritage sites represent assets that inspire people all over the world to travel. They can be beneficial in a way that helps in the restoration of local arts and crafts, revitalization of the social and cultural life of local residents, and restoration of these sites (Akova & Atsız, 2019). The study conducted in two African cultural heritage sites (Zanzibar islands and Lamu in Kenya), showed positive and negative tourism socio-cultural impacts on these properties, from the perspective of residents. It revealed that the residents didn't think that tourism deteriorated the image of the sites, and in both heritage locations over 70% of residents were aware that these were protected World Heritage properties, and as such, they emphasized positive inputs of tourism development and tradition. Less than 20% wanted the number of visitors to be higher (Okech, 2010, as cited in Akova & Atsız, 2019; Surata et al., 2024). By keeping the local residents involved and considered during tourism development planning, it is ensured that this socio-cultural component of cultural heritage site is preserved (Pavlić & Portolan, 2015).

The research conducted among the residents of Chiang Mai in Thailand showed that the most significant concerns perceived by local population were the transformations of cultural heritage sites into a touristic product, the changes in local culture, and increased criminal issues (Somnuxpong & Chiarasumran, 2024). Research conducted in Barcelona highlighted some of the reasons for the displacement of the residents: the socio-cultural activities of the new users, and the modification of old existing places into new spaces strange to the residents (Cocola-Gant, 2015).

It is important to mention the Doxey Irritation Index, a tool for understanding the residents' attitude change towards tourism development in different stages of the development cycle. The attitude of residents consists of four stages: euphoria, apathy, irritation, and antagonism, as the number of tourists increases, the residents' standpoint changes and moves through these phases. This is especially relevant in cultural heritage sites buffer zones, since residents of these areas are affected by tourism the most (Pavlić & Portolan, 2015).

Tourism-induced gentrification is a negative consequence of a high volume of visitors at a certain destinations. Displacement of the original residents to other areas of the city implies the loss of the sense of community and the social circle. Important factors also include housing-related issues and neighborhood problems. An increased demand for tourism facilities and infrastructure, especially those in CHSs' buffer zones, can cause a degradation of the infrastructure directed at residents. Also the character of residential areas changes due to Airbnb and marginalisation of resident population, due to increased

numeber of tourists per resident. Degradation of safety and weakening of moral standards and values are significant consequences of overtourism (Peeters et al., 2018). These processes also threaten the cultural heritage sites, through the risk of losing the authenticity, cultural identity, and original social function of the area.

Tourism, due to its dual nature, besides many beneficial impacts, can also represent a risk to the authenticity of cultural heritage sites. Genius loci refers to the destination's unique character and atmosphere that is being shaped constantly both by the visitors and the residents themselves. Genius loci predominantly is a concept where the focus is on the lived experiences of the users at the particular place at the present moment. All this creates the spirit of the place (Genius loci), which helps managers and planners in fostering authentic spaces and areas that illustrate the true spirit of the community (Lokas, Petrović, & Rakonjac, 2023). The research conducted on the Defensive Castle Open-Air Museums of the Jurassic Belt, Poland, showed the necessity for tourism practices to be in alignment with sustainable development of the particular place, in order to preserve the essence and identity of cultural attractions (Żmudzińska-Nowak& Wałek, 2024).

2.2.3 Environmental-physical impacts of tourism on Cultural heritage

Increased volume of visitors can lead to elevated humidity and CO_2, and represents a danger for indoor air quality and preservation of cultural heritage sites. With higher number of tourists, microclimate of indoor cultural heritage sites is compromised, as well as the conservation of these properties, due to heat and GHGs (Silva & Henriques, 2021). Silva & Henriques (2021) emphasize that air-conditioned structures, for example museums, face the danger of escalating energy demand, while in naturally ventilated buildings, ventilation systems don't regulate increased humidity and CO_2. The same source shows on a case study of the Monastery of Jerónimos in Portugal, that mass tourism can lead to adverese impacts on conservation and museum artefacts. In their study, it was demonstrated that indoor climate of this Monastery is highly affected by the number of visitors, causing structural deterioration (in a form of irreversible deformations) and possible mould formation. Indoor air quality is compromised by the density of occupants, causing also the risk for visitors' wellbeing and health.

Physical deterioration is caused both by tourism-related constructions and tourism activities. In destinations with rich cultural heritage, inappropriate constructions and design of objects for tourism purposes, that are not in alignment with the existing CHSs, compromise the OUV of the sites by undermining the criteria of integrity and authenticity (GDRC, n.d.). Transport infrastructure represents a significant threat, as research demonstrates, traffic-induced vibrations can cause further damage to the previously damaged walls (Tomaževič et al., n.d.).

While GHGs are a real problem, their impact goes beyond the overtourism definition that is related only to a specific destination, since long-haul travel (air transportation) is the

most significant factor for emissions and climate change within the sector (Peeters et al., 2018). The tendency of tourists to choose air transportation, to stay shorter period of time at the destination, and to travel more often, directly shows how tourism influences the climate crisis (Peeters, 2007). This consequently contributes to severe environmental and physical probelms at the cultural heritage sites worldwide.

Climate change, as a persistent global challenge, is crucial to consider when talking about the environmental and physical impacts of tourism. Temperature changes, extreme weather events and increased UV radiation over time can lead to devastating consequences to the cultural heritage sites, such as fading color and loss of pigments, deterioration of stones, surface erosion, weakening of the structure. UNESCO report from 2016 highlights this danger through several examples; India's Elephanta Caves is being at ongoing risk from climate-induced sea-level rise; Djenné mosque in Mali that is in danger due to temperature changes and humidity, as well as similar earthen-built heritage structures; The Historic Centre of Český Krumlov, Czech Republic, and similar historic cities face severe threats from flooding due to climate changes (Markham et al., 2016). Collectively, this can lead to the loss of valuable tangible assets of cultural heritage, loss of cultural identity and substantially, economic losses (European Climate Adaptation Platform [Climate-ADAPT], 2024).

Considering the severe risks to the cultural heritage sites, it is important to revisit the SDGs, specifically Goal 11.4 with its focus on protection and preservation of cultural and natural heritage sites, and tourism as a contributor to global warming and other environmental impacts. It is clear that tourism needs to be managed in a way that contributes to the protection of these properties, and mitigates negative environmental impacts (Markham et al., 2016).

However, it is necessary to note that tourism can create revenues for environmental preservation, which is an important management aspect. In the study conducted by Elgin & Elveren (2024), it is evident that tourism in developing nations has negative impacts on the environmental pillar and health, while developed countries demonstrate the opposite trend. This is also relevant for CHSs, where tourism generates revenues for maintenence, long-term preservation, and protection of these properties.

2.2.4 The concept of overtourism and the tourism carrying capacity of Cultural heritage

Overtourism can be defined as the situation when the impact of tourism surpasses carrying capacities in a specific location and at the specific time. Overtourism negatively affects natural and cultural heritage, causing damage to landscapes, buildings, and local communities (Peeters et al., 2018). Because these sites are constantly part of tourists' itineraries, common consequences include: parking problems in the most visited areas, tourists' inappropriate behaviour affecting local residents and causing resentment, higher housing, rental, and living costs, physical deterioration of the heritage sites, and diminished

visitor satisfaction (Adie, 2019; Cheung & Li, 2019; Neuts & Nijkamp, 2012; Phi, 2019; Rasoolimanesh et al., 2019, as cited in Adie, Falk, & Savioli, 2019). This is particularly prominent in heritage properties and their buffer zones.

The survey conducted by Adie, Falk, and Savioli (2019) indicates that 37% of European residents perceive the increasing number of tourists as a threat to cultural heritage sites. The study further reveals that concerns about overtourism are significantly more prominent in urban areas than among residents in rural areas.

The concept of overtourism is strongly connected to the carrying capacity of a particular place. Carrying capacity refers to the largest number of visitors that a specific site can sustain. Considering world examples of protected cultural heritage sites, it is evident that increasing overtourism in these destinations has created the need for efficient management to regulate and balance tourism supply and demand (European Expert Network on Culture and Audiovisual [EENCA], 2019).

Furthermore, EENCA (2019) emphasizes that sustainable development promotes new and comprehensive carrying capacity models. As these models have been evolving over the years, the most recent ones include various key components: the physical aspect (environmental or infrastructural, relating to either natural or cultural heritage site itself, or, in the second case, infrastructure supporting tourism), political aspect, social aspect (includes the perspectives of residents and visitors), cultural (focusing on intangible cultural assets), and participatory aspect (ensuring the inclusion of all stakeholders at each stage of the planning and decision-making process). In the context of cultural heritage sites, overtourism and exceeding carrying capacities can endanger OUV of the site, affecting the authenticity, integrity, and management necessary for its preservation.

2.3 Tools and practices for monitoring tourism impacts on Cultural heritage

Monitoring and measuring tourism impacts, while a complex task, is of crucial importance for achieving sustainable tourism development. Measuring tourism impacts assists in creating strategies that are essential for the maintenance and protection of vulnerable sites. Measuring tourism's contribution to the GDP and job creation and employment is important when considering economic impacts. Sustainability has to be included in tourism destinations' management through proactive involvement of all relevant stakeholders, support for local business with necessary skills, prioritizing high-value customer segments, and the creation of guidelines in order for the destinations to preserve their ecological value and for the businesses to constrain their negative impacts on environment and socio-cultural segment. (Solimar International, 2018).

This section will discuss the indicators as key tools for monitoring tourism impacts, relevant examples of best practices, existing monitoring frameworks and management practices, and the role of digital technologies on monitoring and preservation.

2.3.1 Management approaches and monitoring practices at UNESCO Sites

Monitoring CHSs is necessary for guaranteeing the preservation of a site's OUV, measuring the site's present state of conservation, proactively identifying issues and potential risks and threats in the early stages so that measures can be taken to prevent further damage, and enabling the exchange of good practices among managers and decision-makers. Furthermore, monitoring contributes to maintaining a high level of visitor experience, addressing problems that the local community faces, and securing funds by serving as proof to future investors that their capital will be managed responsibly and bring the desired outcomes (UNESCO, 2017).

To create an effective monitoring system and sustainable management, it is important to go beyond simple visitor counting, and to consider all three pillars: socio-cultural, physical-environmental, and economic-governance. Destination management organizations (DMOs) have to include all relevant stakeholders and work together, taking a holistic approach that also includes advanced technologies. Centralized IT platforms can integrate data of all three pillars (de Marzo, 2019).

Regarding the socio-cultural pillar, there are tourism carrying capacity indicators (TCCI) that have to be taken into consideration: local benefit rate (LBR), migrant labor distortion rate, noise disturbance threshold (NDT). TCCI for physical-environmental pillar: traffic and infrastructure saturation, pollution exceedance threshold, energy/resource capacity strain. Economic-governance pillar TCCI: land price differential (LPD), short-term rental, external profit leakage rate (Coccossis et al., 2001).

The Old Town in Kraków and the Wieliczka Salt Mine are perfect examples of UNESCO destinations that illustrate how a city that is a well-known and recognized international brand, with all the benefits that increased tourism visitation creates, can at the same time be affected by overcrowding and create detriment for local residents. The comprehensive research conducted in Kraków among relevant stakeholders showed gentrification as a noticeable phenomenon, congestions, lack of parking spaces, moderate overtourism, and the necessity for responsible tourism and tourist traffic management. Research showed the respondents indicate euphoria and apathy (first two stages of the Doxey Irritation Index), but at the same time mixed with pride for having a high volume of visitors which creates a paradox. Tourism development increases the costs of living and housing, resulting in difficulties for local residents (Szromek et al., 2020). "The Sustainable Tourism Policy for Kraków in the Years 2021-2028" is a tourism policy that represents a dualistic aspiration in developing the city both economically and socially, and also is a prime example of regulatory role of the city (Krakow City Council, 2021).

The Mosque-Cathedral of Córdoba is an example of a management of negative tourism impacts on physical-environmental pillar. Since CHSs are vulnerable to physical stressors, there is a necessity for adequate conservation and maintenance of these sites. The site went

through several transformations during the history, and in order to keep the site in its best version, microclimate stations were installed with the purpose of monitoring and measuring microclimate variables caused by exterior conditions (moisture, temperature changes, salts, and biological growth). The research showed that microclimate stations registered greater parameters in periods when CHS was open to visitors. Interior conditions are directly infuenced by exterior weather conditions and are more prominent in zones close to the door (Mesas-Carrascosa et al., 2016).

As one of the most overcrowded cities in the world, Dubrovnik is the perfect case how the monitoring and management of tourism impacts can be done. Its increased popularity due to the TV series The Game of Thrones, cheap flights, cruise ships, and short break rentals, has caused the local residents to move out of the certain areas, tradition has become excessively commercialized, and the traffic congestion (Perkins, n.d.). In order to deal with all this, a real-time visitor monitoring system was introduced by the name “Respect the city”. It consists of six counters that are placed near the Old Town entrance, and the results can be viewed on the official city’s website with an update every 15 minutes. It is clearly noticeable when the visitors numbers reach the carrying capacity (Dubrovnik Visitors, n.d.). There is also the regulation over cruiseships introduced. Moreover, Dubrovnik has implemented so called Dubrovnik pass, first electric car-sharing in Croatia, which strategy “Respect the city” represents a tool for sustainable tourism development (Tragento editorial team, 2025). According to professor Knežević (personal communication, November 12, 2023), Dubrovnik was already in 2016 digitalized , with smart city solutions that aimed to ease sales, purchase and usage control, resource efficiency, marketing optimization, wide possibilities for upgrading, networking, and further development. She also stated that Dubrovnik City card created revenue of 15 million EURfor one year, and at that moment every fourth visitor was buying the card, with the goal that every second visitor buys it. Interesting that Dubrovnik did not conduct any research upon creating the card that came out as a success and contributed to the economy.

2.3.2 Multi-pillar metrics for monitoring the negative tourism impacts on Cultural heritage

The preservation of CHSs has to be based on an effective monitoring system that establishes a base for continuous and comprehensive multi-pillar approach, in order to identify interlinked and complicated threats that affect socio-cultural, environmental, and economic segments.

After the implementation of regional and thematic Programmes, World Heritage Committee acknowledged the need of establishing quantifiable results. This requirement is defined in III draft decision: 30 COM 12, as the urge to establish realistic and measurable results, and indicators that are fundamental for successful performance evaluation and monitoring (UNESCO World Heritage Committee, 2006). Metrics help in identifying the

current condition of CHSs, setting evaluation criteria, improving the reliability of the established system, and measuring the effects that actions have on the system (Masciotta et al., 2016).

Based on the literature, some of the metrics in this set were not explicitly mentioned, but operationalized for the purposes of this study. Operationalization was needed in order to convert existing challenges into measurable indicators that are relevant for the negative tourism impacts on Plečnik's cultural heritage in Ljubljana.

Table 1 presents the framework of metrics fundamental for this work. It consists of four columns; Metrics (The metric name), Pillar, Measurement focus, and source where it is stated whether specific metric was operationalized for this study or cited.

Table 1: Monitoring Indicator Framework for Cultural Heritage Sites

	Monitoring metrics	Pillar	Measurement Focus	Source
	Type and number of cracks	Physical-Environmental	Directly measures physical deterioration	(Masciotta et al., 2016)
	Crack Width and Opening Rate	Physical-Environmental	Directly measures physical deterioration	(Masciotta et al., 2016)
	Differential Subsidence	Physical-Environmental	Directly measures uneven sinking of the structure	(Masciotta et al., 2016)
	Correlation with Ambient Parameters	Physical-Environmental	Measures correlation between visitation and ambient parameters	(Masciotta et al., 2016)
	Visitor Impact Assessment Rate	Physical-Environmental	Measures direct visitors' impact on degradation	Operationalized from (Badia & Donato, 2013)
	Visitor Satisfaction Rate	Socio-Cultural	Measures visitors' subjective satisfaction	Operationalized from (Badia & Donato, 2013)
	Visitor Attendance Rate	Socio-Cultural	Measures the volume and density of visitators, important for tourism flows, TCC, overcrowding	Operationalized from (Badia & Donato, 2013)
	Intangible Resource Measurement Coverage	Socio-Cultural	Measures the level of management's protection of intang. assets and tracking the risk of commodification	Operationalized from (Badia & Donato, 2013)

Table continues

Continued

	Monitoring metrics	Pillar	Measurement Focus	Source
	Effective Participation of Local Population	Socio-Cultural	Measures the level residents' inclusion in decision-making process and cultural life	(UNESCO World Heritage Centre, 2005)
	Threat Detection Effectiveness	Economic-Governance	Measures the effectiveness of management in early detection of potential threats	(UNESCO World Heritage Centre, 2005)
	External Profit Leakage Rate	Economic-Governance	Measures the tourusim revenue lost due to foreign ownerships, imports of goods	Operationalized from (Al-Smadi & Al-Saad, 2022; Hassan et al., 2024)
	Local Supply Chain Capacity Index	Economic-Governance	Measures the ability of local businesses to supply local tourism with local good and labor	Operationalized from (Al-Smadi & Al-Saad, 2022; Hassan et al., 2024)
	Performance System Implementation Rate	Economic-Governance	Measures the extent to which proposed monitoring tools are actively implemented	Operationalized from (Badia & Donato, 2013)
	Management Plan Implementation Rate	Economic-Governance	Measures the rate at which specific management plans are turned into funded projects	Operationalized from (Badia & Donato, 2013)
	Properties Benefiting from WH Fund	Economic-Governance	Measures the extent to which sites use WH funds	(UNESCO World Heritage Centre, 2005)

Source: Own work based on Badia & Donato (2013); Al-Smadi & Al-Saad (2022); Hassan et al. (2024); UNESCO World Heritage Centre (2005).

Note. Some metrics were directly extracted, while others were operationalized and adapted based on comprehensive literature review and analytical synthesis. GAI was used solely as a supportive instrument. Sources used for this work include Badia & Donato (2013); Al-Smadi & Al-Saad (2022); Hassan et al. (2024); UNESCO World Heritage Centre (2005). TCC = Tourism Carrying Capacity; WH Fund = World Heritage Fund.

2.3.3 The role of digital technologies in monitoring and preservation

Considering the multi-layered importance of cultural heritage sites, especially those inscribed on the UNESCO List and possessing OUV, the protection of their structures is

crucial (European Commission, 2015). A new approach is required to shift from reactive to proactive, with the goal of dealing with potential neglect, deterioration, inadequate management, and unregulated urbanization. Since the context is susceptible, preservation strategy needs to be comprehensive and to take into the consideration the past and the present of the site (Farhan & Ahmed, 2025). Farhan and Ahmed (2025) further mention specific tools they used in their research, such as: drone photography for aerial mapping, Geographic Information System (GIS) mapping for environmental risk analysis.

Digital technologies, such as augmented and virtual reality (AR/VR), 3D simulation, contribute to the promotion and accessibility of cultural heritage sites. They assist in providing training and courses in order to address the real issues of cultural heritage sites (EC, 2022).

Zimmel (2025), presenting at the Conference and Exhibition for Emissions and Air Quality Monitoring (CEM) in Ljubljana, Slovenia, introduced the Town Hall in Toledo, Spain (the UNESCO World Heritage Site) as successful case of implementing an invisible air quality monitoring solution. He highlighted that traditional monitoring station, weighing approximately 1.5t, was too large to be placed at the square, since it would compromise the strict regulations of protected CHSs. Instead the Air Pointer was placed at the roof. This device is considerably smaller, lightweight, uses Standard Reference Method (SRM), for fully automated and continuous measurement, and is in compliance with European standards (EN standards). Although both measure 100% the same accuracy, the Air Pointer with its integrated operating system, system for data collection and data processing, uses 90% less power than traditional monitoring station. Basically free of charge, when compared. Also there is a mobile App with all the necessary information.

At the CEM Conference, in Ljubljana, Slovenia, the presentation regarding a case study on the proactive noise pollution monitoring of the Port of Anacortes in Washington, U.S. demonstrated its engagement of the Internet of Things (IoT). The lecturer highlighted the importance of IoT in keeping all the relevant stakeholders continuously updated on the noise pollution levels. Since the area around the Washington Port is becoming more populated with housing, and port operates all the time, the focus is on the proactive program of prevention, education, and proactive education of local community. The challenge that lecturer mentioned is that noise levels are measured at the receiver's location, not at the source location, and that makes the IoT sensor networks critical. He emphasized the importance of ensuring reliable data in remote locations (3G, 4G and 5G are used, 2G is no longer sufficient). The presentation highlighted the importance of Artificial Intelligence (AI) for differentiating between different sources of noise. Furthermore, the official port website is easily accessible to the community where they can find the data on noise pollution, which establishes proactive community engagement (Averdieck, 2025).

2.4 Conclusion of the literature review: Thesis Contribution and Scope

A detailed literature review has led to a comprehensive understanding of the multifaceted importance of Cultural Heritage Sites, including the tourism-driven effects on economic-governance, socio-cultural and physical-environmental pillars (Farhan & Ahmed, 2025). The identified metrics serve as measures to identify problematic areas and highlight the need for a shift of the paradigm from reactive to proactive. The necessity for a holistic approach to CHSs with OUV is evident (European Commission, 2015).

Recent studies emphasize the requirement for the inclusion of digital technologies-including AI enhanced tools, AR/VR, IoT, and proactive approach (Zimmel, 2025; Averdieck, 2025). Since each case is specific, no single solution and approach can be applied. Instead, every CHS has to be analysed individually, taking into consideration its unique characteristics, local community, and government goals.

This thesis proposes KPI framework created to achieve the highest level of protection of Plečnik's cultural heritage. The framework will engage proactive management, engagement of all stakeholders, and digital technologies for preservation and sustainable tourism development.

2.5 The case study: The works of Jože Plečnik in Ljubljana

Jože Plečnik (1872–1957) is one of the most eminent Slovenian architects and the creator of Ljubljana’s Human-Centered Urban Design. He was educated in Ljubljana and Graz, and worked in Vienna and Prague; his work extends far beyond his academic instruction, reflecting his unique vision and philosophy. He greatly affected the development of Slovenian and Yugoslavian architecture. In 2021, his works were admitted to the UNESCO World Heritage List as cultural heritage of OUV under the name “Plečnik’s Ljubljana”. By including the topographical and architectural features of Ljubljana in his work, he created a unique appearance for the Slovenian capital that represents a valuable resource for future generations and development (UNESCO World Heritage Centre, 2021). Plečnik utilized vegetation for directing, and defining borders and edges, as backgrounds for monuments, and along the waterside promenade where, in a way, it is a substitute for actual architecture. This is highly in alignment with his concept of human-centered urban design, since greenery is essential for expressing different moods, such as order, tranquility, and calm, and is a way to establish and maintain the relationship between residents and the natural environment (Republic of Slovenia, 2021).

Figure 2: Ljubljana Central Market



Source: Architectuul (n.d.)

2.5.1 Plečnik's urban design: Significance and concept

In the interwar period, the architect Plečnik transformed Ljubljana using contextual urbanism, with the goal of creating a human-centered urban design that relied on limited resources, limited existing space, and limited time. His vision was revolutionary, standing in contrast to the Modernism prevalent in Europe at the time (UNESCO World Heritage Centre, 2021). Unlike the European modernists—whose most representative architect was Le Corbusier and whose focus was on the pure geometric shapes of everyday objects and mass-produced homes (Nasir, 2025)—Plečnik's recognizable architectural language differentiated itself by prioritizing the human scale and local context. His idea was to transform the city's peripheral status from the former Empire into the capital that would cultivate a human-centered urban design (UNESCO World Heritage Centre, 2021).

Human-centered urban design (HCUD) principles have many benefits for the residents and the environment. Starting from pollution, to transport and accessibility, infrastructure has to be in alignment with the well-being of its residents, supporting their health and respecting the needs of the community as whole. HCUD puts real people into the centre of and prioritizes human needs in each phase. In the context of architecture, through human-centered designs, architects create projects that are ecological, practial and beneficial for the residents (University of the Built Environment, 2024).

Figure 3: Tromostovje (Triple Bridge) in Ljubljana



Source: Kamzavikend.si (n.d.).

The University of the Built Environment (2024) outlines several main characteristics of human-centered architecture:

- The health and well-being of inhabitants
- Universal design and accessibility
- Closeness to nature
- Sustainability and eco-friendly designs
- Social interaction and inclusion
- Culture and identity

Human-centered urban design, which is the core of Plečnik's Ljubljana, deeply relies on the concept called genius loci (spirit of a place) that originates from ancient times when its meaning was related to the protective spirit of the place. Genius loci can be viewed as philosophical and magical concept that is rooted in the idea that people who spend time at certain place contribute and create the character and atmosphere of that place. The spirit of a place unites tangible and intangible components, creating a powerful core and unique identity (Stepanchuk, Gafurova, & Latypova, 2020). Genius loci can help in detecting and preventing possible deterioration of cultural heritage sites caused by overtourism and similar factors, to which this entire study is dedicated (Żmudzińska-Nowak & Wałek, 2024).

It can be said that Plečnik's Ljubljana is a total work of art (in German Gesamtkunstwerk). This concept is based on the idea that artistic creations consist of several art forms, unified in a cohesive whole. The total work of art, present from the beginning of the 19th century, when the concept emerged, up to modern times, relies on mutual collaboration among different artistic disciplines and includes the audience as a significant factor

(Gesamtkunstwerk, n.d.). Viewing Plečnik’s human-centered urban design in Ljubljana, it is inevitable to notice that the concept of Gesamtkunstwerk facilitated his idea to create a capital where the center will be its residents, which potentially can lead to an equitable and more utopian society.

Plečnik's work can also be viewed through the classical revival, which is described in the architecture as employment of classical elements, such as Roman and Greek architecture into newer buildings (Waters, 2017). His small-scale urbanism, although mainly on paper, had an undeniable impact on his work (Kosec, 2024).

2.5.2 The UNESCO World Heritage destination (2021) and associated threats

As mentioned earlier, Plečnik’s work was driven by a human-centered urbanistic philosophy, in which he wanted to unify the city’s existing fabric with new elements that would meet the needs of the modern 20th-century society, taking into consideration the natural characteristics of the town, its existing architecture, and its intangible qualities (Republic of Slovenia, 2021). His unique style, vision, and conception, which are highly human-centered, stand apart from the modernism of his time, and are what make his distinctive style recognizable, leaving a significant cultural legacy for future generations. The visionary architect harmoniously unified present structures with the new cityscape, which he imagined to be multifunctional, and tailored to the needs of residents (Republic of Slovenia, 2021).

With the goal of connecting the existing peripheral city with modern and human-centered solutions, Plečnik created the city’s urbanistic network. That network, as mentioned earlier, consists of public spaces divided into land and water axes. The land axis is the Green Promenade that starts from the Trnovo Bridge and ends at Congress Square with Zvezda Park, including the Square of the French Revolution and Vegova Street with the National and University Library (UNESCO, 2021). The same source notes the parallel water axis that starts at the Trnovo district and ends at the Sluice Gate, consisting of the riverfront and bridges along the Ljubljanica River, including Plečnik’s Market. The downtown is a mixture of rural and urban suburbia, including prominent buildings such as Plečnik’s Žale Cemetery, a funerary complex – the Garden of All Saints, the Church of St. Michael, and the Church of St. Francis of Assisi. As illustrated in Figure 1, for a cultural heritage site to be inscribed on the UNESCO World Heritage List, it needs to meet one or more World Heritage criteria, it needs to meet the authenticity and integrity criteria, and to fulfill requirements for protection and management.

Plečnik’s Ljubljana meets Criterion (iv), which requires that a cultural heritage site is of outstanding value and represents an important example of a stage in human history. Regarding integrity, as previously established in this work, his work successfully unifies

past and present, using the existing settlement with the addition of new and unique elements. Authenticity in this case study refers to the original design, the authenticity of materials used, and the harmonious relationship between the old settlement and the new urban solutions (Republic of Slovenia, 2021). The Republic of Slovenia (2021) mentions the protection and management requirements, stating that the legacy of Jože Plečnik in Ljubljana is protected as a cultural monument of national importance by the Ordinance, including all movable and immovable parts of this serial property. The Institute for the Protection of Cultural Heritage of Slovenia (IPCHS) is responsible for the conservation of these cultural heritage sites, and it performs constant monitoring of the condition of each site. The same body also monitors each new project that could influence the existing CH and cause damage.

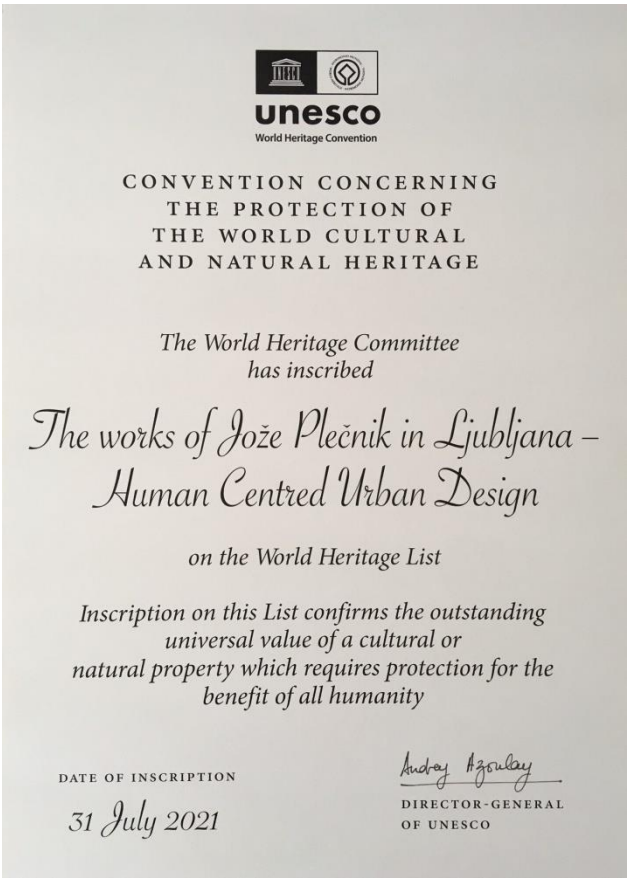
The Nomination File written by the Republic of Slovenia for inscription on the UNESCO World Heritage List, as submitted, describes each piece of Plečnik's Ljubljana cultural heritage sites, stating the threats, risks, actual damage, and degradation (Republic of Slovenia, 2021). A logical categorization of the associated threats splits them into three groups: one category covers the threats that could cause fundamental damage to the core structural stability of the buildings, the next one includes threats caused by environmental conditions that cause material degradation, and the last one refers to threats caused by humans and urban life.

In relation to threats to the structural stability of the buildings, the Nomination File mentions the reparation of lamps and the bridge structure needed at the Cobblers' Bridge, since the damage on the concrete railing was severe (Republic of Slovenia, 2021).

Regarding the threats caused by environmental conditions and nature, the Nomination File states the following: the wall on Vegova Street has stains due to atmospheric conditions; vegetation requires rehabilitation as its root system represents a threat of material deterioration, and the size of the vegetation has outgrown the original design. On the National and University Library, repairs were done on the windows, which led to the reduction in energy loss, and air conditioning devices could be removed, which kept outer surface in its original state. The document mentions the Roman Walls in Mirje, where uncontrolled plant growth and turf had to be removed, and roof repaired due to a prolonged exposure to atmospheric conditions. In Trnovo Quay was noticed a minor deterioration caused by the water and vegetation, while in general reported to be in good condition. At the Cobblers' Bridge the vegetation was restored in alignment with original design. As a result of water presence, there was damage present on the riverside section of Plečnik's Market, and roof tiles need to be repaired. Sluice Gate suffers the deterioration due to constant moisture and humidity. The Church of St. Michael with its surroundings required rejuvenation of trees according to the original design. The original concrete roof tiles were reconstructed according to the authentic design and with that the future damage on the wood was stopped and floor got new water-resistant coating. In the file it is stated that wooden window and door frames will need to be repaired soon. Some of the windows and

doors of the Church of St. Francis of Assisi had to be replaced with replicas (Republic of Slovenia, 2021).

Figure 4: UNESCO World Heritage Certificate for Plečnik's Ljubljana



Source: Museum of Architecture and Design (2021).

Concerning the threats arising from humans and urban life, it is mentioned that urban development with the traffic was causing damage to the Congress Square, since it was used as a parking, but after the underground parking was built, that issue was removed. The same cause has been affecting the Promenade along the Embankments and Bridges of the Ljubljanica River (which include: the Trnovo Quay, the Three Bridges, the Cobblers' Bridge, Plečnik's Market and the Sluice Gate); intensified traffic has caused air pollution. This changed when the area became closed for transport, except for inhabitants and delivery services, while visitors can use ecological options of transportation. Gerber's Staircase, although generally in good condition, had minor stains due to atmospheric conditions. The Three Bridges were heavily affected by traffic that caused corrosion of the surfaces, but the traffic ban has resulted in improvement. Now the area is used only by pedestrians, and motor vehicles are allowed only for inhabitants with special permits and delivery services. Plečnik's Market as a very significant and vibrant place, faces the necessity of underground parking, due to numerous visitors, delivery services, and events (Republic of Slovenia, 2021).

3 METHODOLOGY

This chapter presents the methodology designed to explore the negative impacts of tourism on Plečnik's cultural heritage in Ljubljana. This discussion is organized into several main sections. To begin with, it justifies the choice of a qualitative exploratory design, that facilitates the search for new indicators beyond those identified in existing data. Further on, it explains the strategy used to select key stakeholders. Moreover, it details the semi-structured interviews that enabled the exploration of the real indicators relevant for estimating tourism impacts on Plečnik's cultural heritage. Finally, this chapter addresses the ethical steps taken to ensure the privacy of the participants and the overall quality of the research.

3.1 Research design and methodological approach

In order to address the complex relationship between tourism and cultural heritage, this study will utilize semi-structured interviews. As a traditional sociological tool, semi-structured interviews aim to answer questions about processes, attitudes, understandings, and meanings (Trošt, 2022). While this approach increases the internal validity of a study, reliability could be complex. This method is used when it is needed to discover WHY and HOW of people's perceptions. An exploratory research design is significant in investigating new insights, in understanding what is happening, and also in examining the subject from fresh perspective (Saunders et al., 2016, as cited in Saka et al., 2023).

According to Trošt (2022) in-depth interviews can help capture valuable insights from people who are gatekeepers of this cultural heritage. Semi-structured interviews allow the researcher to ask the follow-up questions in response to interesting insights he received during the interview. In thi study expert interiews were conducted with key stakeholders who have specific knowledge in relation to management of Plečnik's Ljubljana.

Exploratory research design is very useful also because it is versatile and flexible. It allows the researcher to change the direction of his work once he faces the new insights, and to investige under-researched areas (Saka et al., 2023). It is an inductive approach (bottom-up) because it aims to explore areas that have not been investigated yet. Unlike descriptive or comparative studies that use mainly deductive approach, in inductive research investigators do not have much predictions on what they will discover (Rendle et al., 2019).

While there is a positivist paradigm in quantitative research, in qualitative inquiry approaches vary from positivist to interpretivist. This means that researchers in qualitative studies must be aware of the importance of research paradigms in order to understand the nature of their inquiry (Otani, 2020). Berryman (as cited in Pervin & Mokhtar, 2022) argues that in order to find answers to research questions, the qualitative researcher must create the interview in a way to understand why and how. According to Saunders et al. (as

cited in Pervin & Mokhtar, 2022), it is crucial that the author understands the differences between people. It is important to mention saturation as an indicator of sample sufficiency. It indicates when the data collection can be stopped, because enough valuable insights have been collected from the people who truly understand the topic (Francis et al., 2010, as cited in Rahimi & Khatooni, 2024). In qualitative research, sample size should not be too small nor too large. An excessively large sample would obstruct detailed case study analysis, while sample that is too small may prevent achieving data saturation (the point at which additional data no longer yields new insights) (Trošt, 2022).

The researcher is crucial for the integrity of the research. Since qualitative inquiry lacks some protective mechanisms that exist in quantitative research, the investigator's own competency and honesty play a major role. Bias can become a challenge in this process because of the researcher's ideas about the study, literature review he conducted, and his hopes for the study (Capella University, n.d.).

In qualitative research, in-depth interviews are an example of data source triangulation. Triangulation represents the use of numerous methods used in order to achieve deep and extensive interpretation of the phenomenon. Although there are four types of triangulation (method triangulation, investigator triangulation, theory triangulation, and data source triangulation), this thesis uses data source triangulation in which data are collected from different groups of people (Denzin, 1978; Patton, 1999; as cited in Carter et al., 2014). While in-depth interviews offer flexibility and responsiveness, they often are time-consuming (Carter et al., 2014).

3.2 Research Context

Plečnik's heritage in Ljubljana, as a representation of human-centered urban design, is among world's most attractive cultural heritage sites. He successfully transformed the existing city's image during the interwar period and created unique and valuable treasure for the future generations. In 2021 when Plečnik's Ljubljana was inscribed on the UNESCO World Heritage List as a heritage of Outstanding Universal Value. This heritage was built around the land and water axes that connect city center to the surrounding areas (UNESCO, 2021).

According to the Statistical Office of the Republic of Slovenia (2025), the municipality of Ljubljana recorded 1,127,904 arrivals and 2,227,669 overnight stays in 2019 (pre COVID year). In 2024 these numbers reached 1,276,455 tourist arrivals and 2,590,898 overnight stays. This is an indicator that visitor volume has increased since 2019. Tourist arrivals augmented by 148,551 (13.2%), and overnight stays grew by 363,229 (16.3%), indicating the increased pressure on the city's infrastructure. Increased visitation affects cultural heritage, and the necessity for sustainable management to ensure adequate monitoring, preservation and supervision of CHSs is an imperative.

In the inscription document that Slovenia submitted in 2021 upon application for the UNESCO World Heritage List, a SWOT analysis identified among its weaknesses: “no comprehensive and harmonized promotion strategy for Plečnik’s heritage”, “no systematically structured archive of Plečnik’s heritage”, “younger generations are not sufficiently involved in research of Plečnik’s heritage”, and “the state and local communities do not encourage systematic research into Plečnik’s heritage”. The same analysis also identified that “the nominated properties are spread over a relatively small area manageable for visitors”, and “Plečnik’s heritage is well integrated into Ljubljana’s tourism offering”. By synthesizing these, the relevance of this research is clear, and has the goal to contribute to the sustainable tourism development, promotion and preservation of Plečnik’s Ljubljana. Furthermore, the SWOT analysis also recognized opportunities, which are the proof that this research is valuable and carries potential for future development. “Encourage young people to study and research Plečnik’s architecture”, “improve the promotion of heritage at the international level”, “part of the revenue from guided sightseeing tours of Plečnik’s heritage should be earmarked for the maintenance of Plečnik’s heritage” (Republic of Slovenia, 2021, p. 180).

3.3 Sampling Strategy

Purposive sampling is a non-probability technique used in qualitative and mixed methods research. It can be defined as selective sampling based on predefined criteria, according to the applicability of their insights for the specific study. Purposive sampling is useful for gaining a comprehensive understanding of the phenomenon (Tajik et al., 2024). This type of sampling is used when researchers want in-depth understanding of a topic. One of the advantages of purposive sampling is that it provides multifaceted insights (Palinkas et al., 2015, as cited in Tajik et al., 2024). The participants’ selection can be based on the researcher’s subjective decision, according to the purpose of the research. The investigator purposefully selects common cases, crucial cases, extreme cases, highly diverse cases, confirmatory or deviant cases, and the units chisen can be heterogeneous or homogeneous (Trošt, 2021). It is more financially viable and time-efficient than probability-based approaches (Etikan et al., 2016, as cited in Tajik et al., 2024). Purposive sampling is a good choice when expertise is required (Ritchie et al., 2014, as cited in Tajik et al., 2024). It allows flexibility in a research design as a researcher starts to understand the topic better (Patton, 2015, as cited in Tajik et al., 2024). This research relies on expert selection of participants.

Since this research aims to achieve a deep understanding of the topic, key informant interviews are highly relevant. Key informant interviews are conducted with knowledgeable key stakeholders, are based on the set of topics that need to be explored, and they are semi-structured. They are used when it is required to generate recommendations, explore new ideas, search for new solutions. Some of the disadvantages might be that these interviews are prone to bias if the informants are not appropriately

targeted, validity might be problematic (USAID Center for Development Information and Evaluation, 1996). In order to avoid bias, this study seeks the experts from different sectors (as already menioned- triangulation) and will evaluate their expertise and adequacy. This research consists of six participants who are experts in their field and includes: a curator at Plečnik House, the Head of Conservation Services at Museums and Galleries of Ljubljana, a conservation advisor at the Slovenian Tourist Board, a project manager for cultural tourism at the Institute for the Protection of Cultural Heritage of Slovenia, a project manager at Tourism Ljubljana, and a world heritage and architecture specialist at the Museum of Architecture and Design (MAO).

The concept of "information power" is used to decide the appropriate sample size for the specific research. Information power confirms that the sample size is proportional to the amount of information that participants hold. The following five factors influence the information power of the sample: the aim of the study, sample characteristics, application of the established theory, the communication quality, and strategy chosen for the analysis (Malterud, Siersma, & Guassora, 2016).

Experts interviews in qualitative research are crucial for comprehensive understanding of certain decision-making processes, since experts hold specific knowledge (von Soest, 2023). Expert interviews can be very useful for optimizing a time-consuming data, when it is not easy to access a certain social fields or situations, and they often provide the opportunity for the researcher to swiftly obtain good results. Another advantage of expert interviews is that frequently the interviewer and the participant come from the same scientific field, which makes the intrviewee more motivated to engage in the research (Bogner, Littig, & Menz, 2009). According to Trošt (2022), experts might give quicker insights into the topic, processes, strategies, while their opinion in not neutral since it reflects their opinions and perceptions.

Choosing information-rich participants among key stakeholders is of major importance for gaining deep understanding of the topic and a specific context and ultimately identifying KPIs relevant for the preservation of Plečnik's Cultural heritage.

3.4 Data Collection: Semi-Structured Interviews

In order to conduct a rigorous inquiry, there is a protocol/guide that needs to be followed. The interview questions in this study are organized into four blocks, beginning with routine questions that serve to establish participants' professional background, then smoothly transitioning to more sensitive ones, ending with questions whether the respondent has something to add. The interview consists of open-ended inquiries, aiming to identify how and why specific phenomena occur, while utilizing follow-up prompts in real time if needed to answer the research questions of this thesis (Trošt, 2022).

The objective of semi-structured interviews is to acquire information from key informants, who can provide valuable insights based on their experiences, perceptions and attitudes. Semi-structured interviews are often exploratory, as in the case of this research, where the goal is to disclose new findings, like new KPIs (DeJonckheere & Vaughn, 2019).

Discussion consists of 10 main questions that emerged from the literature review and discussion with tourism expert, accompanied by brief follow-up questions when necessary. Participants were chosen among key stakeholders, relying on their role, expertise and experience. The number of interviewees is determined by the saturation of data. To ensure the reliability of the data, each interview session is audio recorded and transcribed verbatim for the analysis.

Table 2: Interview Sample Characteristics

Participant	Organization	Position	Expertise focus	Years of experience
1	Plečnik House	Curator	Architectural heritage interpretation	25
2	MGML	Head of Conservation Services	Heritage conservation & project management	20
3	Slovenian Tourist Board (STO)	Project Manager	Research and Development, Promotion of Slovenia Abroad	7
4	Institute for the Protection of Cultural Heritage of Slovenia (ZVKDS)	Conservation Advisor	Built Heritage Division	15
5	Tourism Ljubljana	Project manager for Cultural tourism	Culture/Art historian	8
6	Museum of Architecture and Design (MAO)	Project Manager	UNESCO World Heritage / Plečnik heritage coordination	9

Source: Own work.

This research tests interviews by using a pilot test in order to prepare for the discussion and and confirm the quality of questions (Kelley et al., 2003, as cited in Tate et al., 2023).

The interviews were conducted in-person, in a comfortable environment, ensuring a quiet atmosphere and quality of the recording. The duration of the interviews depended on the participants' specific field of research, their engagement, and availability on the particular day. Most of the interviews lasted between 55 and 75 minutes, while one had duration of 20 minutes. All the interviews were conducted in Slovenian language. They were transcribed manually. Some participants during the interview were providing the additional relevant materials, which are included in the transcript as additional data.

3.5 Data Analysis: Thematic Analysis

Thematic analysis is a widely used method for identifying, analyzing, interpreting, and reporting patterns or themes within a qualitative dataset (Trošt, 2022). The researcher's role in thematic analysis is reflexive and active, codes evolve into themes, and the focus is on meaning, context and interpretation (Ahmed et al., 2025). Braun and Clarke's six-step framework (2006, as cited in Ahmed et al., 2025) includes: familiarization with the data, coding, identifying themes, reviewing themes, naming themes, and writing the report. Familiarization with the data is a fundamental step when the researcher engages deeply with the dataset collected. This phase begins with the transcription of the data, maintaining verbatim precision, noting verbal and non-verbal elements (subtle vocal signals, pauses and expressive cues). The same source defines coding as the next stage where the researcher moves to significant data extracts aiming to break complex data into analyzable units. It is both a technical and interpretative process. Identifying themes consists of grouping similar codes and analysing how they interact among each other (Ahmed et al., 2025). In inductive coding themes arise from interviewees' responses (Fereday & Muir-Cochrane, 2006). In the fourth stage researcher evaluates if the themes properly reflect the data. Crucial step in the phase of reviewing themes is to decide when to stop revision and refining themes. Next step is naming themes, when distinctive and clear definitions of each theme are provided, assuring they answer research questions and accurately represent the dataset. The last phase of thematic analysis is reporting, providing an unambiguous and transparent narrative. This final step represents compelling and theory-based analysis of the dataset (Ahmed et al., 2025).

Boyatzis (1998, as cited in Fereday & Muir-Cochrane, 2006) defines a good code as one that successfully reflects the depth and important details of the qualitative data.

According to Trošt (2022), inductive coding process consists of the following steps: multiple reading of the transcripts, outcome-driven planning (a priori to coding process, it is important to define the goals that need to be achieved), have more codes and merge them later, a code-book with defined coding methods, revision of the coded data, codes we have should arise from the data, not by pre-defined expectations, and write down reflective notes.

In the case of Plečnik's heritage in Ljubljana, thematic analysis will enable the researcher to identify patterns in participants' perspectives on the tourism impacts on this UNESCO cultural heritage.

All interviews were conducted in Slovenian. Audio recordings were transcribed into text manually. This study employed generative AI (ChatGPT) as a supportive instrument during the coding phase, while all coding decisions, code refinement, code grouping, and analytical decisions were made by the researcher.The original codes are written in

Slovenian, and translation from Slovenian into English strives to preserve the original nuance of the participants' responses.

3.6 Trustworthiness and Ethical Considerations

The Economic and Social Research Council (ESRC, 2015) outlines the following six key principles for ethical research:

1. Participation should be voluntary.
2. The dignity and rights of participants must be respected.
3. Benefits of the research for individuals and the society should exceed any potential harm.
4. The research should be conducted in a way it respects the integrity, quality, and transparency principles.
5. Independence of the research process has to be maintained.
6. During the research, the preferences of each participant with regard to anonymity and confidentiality must be respected.

In compliance with these principles, before the interviews started, participants signed the interview consent form provided both in English and Slovenian. It consisted of a brief introduction of the researcher and the topic, information that participation is voluntary and that they could withdraw at any moment. In the consent form, participants were asked to allow audio recording, and to choose how they want to be identified, either by name and position, only by their professional role, or to keep their participation completely anonymous. Data was stored in the personal computer of the researcher, protected with the password.

To enable trustworthiness in the research, the components than need to be included are: credibility, transferability, dependability, and confirmability (Ahmed, 2024).

Generative AI (ChatGPT) was used as a supportive tool in the preparation of Table1 (in the literature review section), to assist in structuring and clarifying how some metrics were defined, since the literature provided only partial clarity on their explanation. All final decisions and checks were done by the author, and the use of the tool is also mentioned in the relevant parts of the text.

4 FINDINGS

In order to meet the goals of this study, six semi-structured, expert, in-depth interviews were conducted. The interviews focused on management, protection, conservation,

monitoring, and balancing between the protection of Plečnik's cultural heritage in Ljubljana and tourism development.

The audio-recorded interviews were transcribed and coded, and codes were grouped in one of the belonging pillars: socio-cultural, environmental-physical and economic governance management, ensuring they represent a valid foundation for the themes that emerged from the data.

Three of the six experts consented to be identified by their name and role. The first named expert is Mr. Tomaž Štoka, Project Manager at the Museum of Architecture and Design (MAO), which acts as a joint manager of Plečnik's heritage. His professional insights provide a core perspective on Plečnik's cultural heritage, especially regarding the UNESCO World Heritage nomination process in which he has been included since 2017.

The second named expert is Ms. Ana Porok, Curator at the Plečnik's House (part of the Museum and Galleries of Ljubljana - MGML). With 25 years of experience and vocation of art historian, her insights are valuable for socio-cultural presentation, heritage conservation, and interpretation of the site.

The third named expert is Ms. Katarina Toman Kracina, Head of the Conservation Department at the MGML. With 20 years of professional experience in conservation and restoration, her insights are critical in understanding the authenticity of the cultural heritage and practical preservation of Plečnik's sites.

The remaining three participants requested to be identified by their professional role solely. Slovenian Tourist Board (STO) expert who act as Project Manager, provides insights into national destination branding and the strategic promotion of Slovenian tourism abroad.

Institute for the Protection of Cultural Heritage of Slovenia (ZVKDS) expert who acts as the Conservation Consultant offers technical perspectives on physical conservation guidelines and the protection of Plečnik's sites.

The Project Manager for Cultural Tourism at Ljubljana Tourism, and expert with a background in art history, provides insights into the economic governance and practical management of tourism interpretation.

After the audio-recodrings were transcribed and coded, generating the total of 1036 codes, the codes were divided into one of three pillars: socio-cultural, environmental-physical, and economic governance management. In order to manage this volume of data and ensure rigorous analysis, codes inside each pillar were clustered into sub-categories based on their underlying similarities. Through the clustering process and reviewing the codes, six core themes emerged, that were able to catch the participants' perspectives relevant to the protection of Plečnik's Ljubljana.

Table 3: Example of Coding of the Interview Transripts

Illustrative references	Codes	Theme
Pillar: Environmental-physical "Ljubljana has way too much visual pollution... I mean, billboards around the city, it's just so distracting... everything possible... terrible things." (Tomaž Štoka)	• Visual pollution of the urban space	Presentation, Visual Identity, and Visual Pollution
Pillar: Socio-cultural "When the Open Kitchen started, it seemed like a good idea... now it is a mess... firstly it is not cheap, secondly it is packed, and you have to crowd with that food and sit on the stairs... The gastronomic aspect at the markets, which in principle should be more about selling groceries for daily consumption, is not in the right proportion.... " (Conservation Consultant)	• Exclusion of residents due to unaffordabilit	Community Well-being, Local Needs, and Governance
"..it is actually a comparative advantage of Slovenia compared to other destinations... That this should be communicated primarily as a value, not as a tourist attraction in this view, but as a value that supports Slovenia, which is in the first place important for us, for our heritage..." (Project Manager).	• OUV as a universal value of heritage	Interpretation, Visitor Experience, and Human-Centered Urbanism
Pillar: Economic Governance Mangement "Right now, as far as management is concerned, we	• Upgrade of management practices	Institutional Integration and Stakeholder Collaboration in Heritage

Table continues

Continued

Illustrative references	Codes	Theme
are still at a stage where we need to upgrade the management plans... every management plan has an action plan, I mean, how to put it – a good management plan is such a piece that it has short-term, medium-term, and long-term goals... and currently we need to prepare new ones, and basically, I am now dealing with preparing recommendations for the operators, for the management plans of these individual units." (Tomaž Štoka)		

Source: own work

Following the coding framework, the findings derived from six expert interviews were organized into three analytical pillars, yielding six core themes that represent the essential substance of the interview contents.

4.1 Theme 1: Presentation, Visual Identity, and Visual Pollution

Visual identity and visual pollution emerged as primary concerns among experts. Most of them agreed that visual pollution is a serious consequence of increased tourism, undermining not only the city's aesthetic identity but also jeopardizing Plečnik's core vision of designing a city for its inhabitants.

Štoka sees visual pollution as multidimensional danger for the cultural heritage and tourism as its main cause:

"Ljubljana has far too much visual pollution, I mean billboards around the city, it is really so distracting, terrible things. Right there across the city, and in fact these billboards, advertisements [...] that is abnormal, so that the value of Plečnik's heritage becomes problematic [...]. Plečnik intervened in the city and built a kind of urban network for the city; actually, he very strongly regulates your orientation in space as you walk. In Ljubljana, you have such a strong visual pollution... [...], it's a disaster, and you don't want to have extra [...]... the architecture should actually speak for itself. You don't need to throw photos of architecture alongside it.. [...],. there is already too much visual pollution" (Štoka).

This statement emphasizes how visual pollution negatively impacts the values of Plečnik's cultural heritage, particularly its authenticity and human-centered urban design, by degrading spatial harmony that Plečnik designated for pedestrians.

Conservation Consultant notices the saturated gastronomic offer in the central city areas, affecting the locals and their daily lives, and also the authentic Plečnik's idea about the public spaces:

"The gastronomic aspect of the markets, which in principle should be more focused on the sale of daily groceries, is not in the right proportion. That is, we have a lot of gastro-tourism and less of the actual market sales or exchange of goods. [...] In short, there is simply too much of this food, yes it is nice, but somehow it all affects the space, so that it is already becoming a bit inappropriate [...]. Plečnik's promenade, which was once experienced when walking from Trnovo Bridge all the way to the end of the market, somehow loses some of its quality here" (Conservation Consultant).

This expert's perspective highlights how the influx of gastronomic services affect the most visited areas, disrupting normal pedestrian flow and original purpose of the space.

"Plečnik designed it with this intention—so that when you are standing in Congress Square, you can see the obelisk. Plečnik always designed these visual axes with such a purpose, without needing any sign telling you to "look over there toward that"—he designed it that way from the very beginning. As far as visual pollution is concerned, I think Ljubljana is beautifully arranged, but I am terribly bothered by the billboards everywhere along Celovška and Tržaška streets, and outside of Ljubljana. These massive promotional billboards have nothing to do with Plečnik, but I consider them a crime in Slovenia, and I would ban them by law. When a visitor comes to Ljubljana, one notices that the surroundings—such as whether the market seating consists of beautiful wooden chairs or looks more like a village fair with plastic tables and chairs—greatly affect the perception of the arcades themselves. Ljubljana possesses a specific heritage with deep symbolism, and anything placed around it can strongly impact this environment " (Project Manager).

Project Manager (2026) states that despite Ljubljana being a beautifully designed capital, visual pollution in a form of advertisements outside the city centre degrades the aesthetic component and the deliberate spatial design that Plečnik created. The expert notes that Plečnik's intentional urban planning guides the viewer naturally that no additional orientation markers are needed.

Porok, the curator at Plečnik House, connects increased number of visitors with potential physical damage to the house itself.

"Speaking specifically about the Plečnik House, with a larger number of visitors, there is naturally a greater chance that a certain percentage of them will behave in a less respectful

manner, as my colleague mentioned. For instance, graffiti occasionally appears on the house [...] If there were extreme daily visitor numbers, this would be quite a challenge for us; there could be more vandalism. Of course, for other types of heritage, such as churches or libraries, this needs to be regulated" (Porok).

Porok highlights how the surge in tourist numbers threatens the site in a form of material degradation and localized visual pollution. She also emphasizes the importance of determining the carrying capacity of a specific place in order to keep things under control.

Toman Kracina mentions occasional acts of vandalism on Plečnik House:

"We occasionally experience acts of vandalism, such as graffiti on building, but we do not have as much oversight over other locations. We have other things under control, and there are, of course, weather-related issues as well... These things are not caused by tourism" (Toman Kracina).

Kracina emphasizes that deterioration on the facade of Plečnik House can be caused by non-tourism factors as well, such as weather conditions and vandalism.

4.1.1 Potential KPIs emerging from Theme 1

- Number of advertising signs within UNESCO protected sites and their buffer zones

This KPI emerged from participants' concerns regarding the presence of commercial signs, digital screens, posters, and billboards within protected and buffer zones. The indicator could be measured through field mapping and six-month reporting done by municipal inspection.

- Percentage of outdoor restaurant furniture that follows heritage design guidelines

Measures how much of outdoor restaurant furniture (tables, chairs, umbrellas, heaters, etc) follows officially defined criteria (municipal/heritage checklist) at UNESCO sites and buffer zones. It could be measured through regular field inspections using a checklist that checks materials, colours, size, and placement, done quarterly by heritage authorities.

- Number of vandalism incidents recorded annually at heritage sites

Graffiti, vandalism, and other forms of inappropriate visitors' behaviour appear occationally at Plečnik's heritage sites. This indicator measures the number of these incidents (based on police, site manager and conservation authority records) where each incident would count once it is reported and confirmed.

- Percentage of market space assigned to traditional market functions

This KPI measures the percentage of Central Market assigned to traditional market functions (sale of regional food products), in comparison with the commercial gastronomic and event use.

4.2 Theme 2: Spatial distribution, Capacity, and Visitor flows

Spatial distribution, Capacity, and Visitor flows in Plečnik's Ljubljana emerged among the participants of this research as a highly relevant concern, emphasizing the importance of balancing between center and other areas of the city. As the volume of visitors increases during the high season, the concentration of people at the Triple Bridge creates a bottleneck, which negatively affects walkers.

"[...]sometimes there were cafes, but now it's all about coffee and food, all the time there is some food, and it somehow loses that local feeling...I was born in Ljubljana, I grew up here, spent my youth and student years here, and I even went to school in the center before, so I moved around a lot... and when we were dealing with Plečnik, I realized that when we were young and met near school on a Friday night, we always spent time in the parts that Plečnik had designed.. [...]. I connected this later. First in Tivoli, then around Congress Square, or here where there is a passageway built by Plečnik's student from the Maximarket to Congress Square, where we used to gather, and then on the Trnovo Embankment. I mean, the parts of the city that Plečnik designed were always the most inviting, and that is a great indicator that his human-scale approach really works" (Conservation Consultant).

Conservation Consultant notices increased visitation during summer months at most prominent areas in the center, accentuating how Plečnik's architectural solutions really manage to guide walkers, providing a real human-centered urban design.

In the following citation, Štoka indicates how impressive Plečnik's vision was, far beyond architectural solutions. He focuses on the design that leads the walker, providing all necessary conditions for inhabitants to truly effortlessly navigate through space.

"This is a masterpiece... this movement through the city when the space guides you.. [...]. Well, he has very strong point-based approaches like this. In short, he constantly creates points throughout the city that are basically an indicator of where to go, at the same time giving you orientation. [...] But you have a point, lines, and then you have these intermediate spaces... where you simply sit, which actually work, and where people sit.. [...]. that is the quality of Plečnik, when in fact Ljubljana was his playground, he knew everything that was going on in the city, and in fact, from this knowledge of the community, he arranged the space very much in a way that makes you think about how people will spend their time there and makes you think on one hand about how you will move through the city, and at the same time how you will do all other possible things, how

you will socialize, how people will reside there, that is such a crazy quality.. [...]. It is a really great arrangement" (Štoka).

Ultimately, Štoka emphasized Plečnik's holistic approach that blends social, urban, aesthetic and dysfunctional component.

In the quote below, project manager who is engaged in the promotion of Slovenia abroad, states the current promotional activities that STO is conducting, assuring dispersion of visitors over the region and country, and systematic and sustainable tourism development.

" [...]..Yes, that is correct, because we also have to be very careful how we promote things and ensure we do not promote the most visited spots that are already overloaded by themselves. We, as the destination organization, constantly receive comments saying we only promote Bled, Postojna, or Ljubljana, but that is not true. We promote the whole of Slovenia, very systematically—the east, the thermal spas, Ptuj, Maribor, and so on. So, it is the destination's task to try and balance this as much as possible, for example, by linking Bled with Radovljica or Žirovnica and offering special packages for visitors staying in Bled to go spend one day visiting Radovljica and Žirovnica, so that they spread out a bit. [...].. rather than promoting just the castle and the island, or strictly just the center. Yes, to attract attention and get people out of the center for a day. I think Ljubljana is very aware of this and generally does a really good job; they connect very well with Kamnik, for example, and with other surrounding municipalities. And they promote Velika Planina and Kamnik as a town quite a lot to draw people slightly away from Ljubljana [...] We could consider that the burden on these freely accessible Plečnik's monuments is increasing, let's say Tromostovje or all the others, NUK to a certain extent... But again, this is not directly tied to Plečnik, it's more about regulating the visits in general, basically relieving these most-visited locations, which Ljubljana definitely is a part of. ... Then the potentials here definitely lie in measuring carrying capacity... maybe this could also be done for Plečnik's monuments " (Project Manager).

Project Manager emphasizes the current situation regarding distribution of tourism flows, promotional activities aiming at balanced tourism development and maintaining the representativeness of existing cultural heritage.

Conservation Consultant in the following citation mentions the good management practices of Florence that are resulting in good management of tourism flows, supporting outskirt areas and less popular destinations.

"And then these tourists are directed to different parts.. [...] Because the head manager there worked at UNESCO for many years and knows the system, they essentially established a working group, with each part in charge of a specific aspect... [...] and then they created a management plan and improved it twice. This could be done on a macro and micro level, and this is how Ljubljana is relieved.. [...]. and they really diffused the pressure that Florence had, not only on the protected UNESCO part but also on the

surrounding area.. They worked a lot on the dispersion of visitors by directing them to different locations, and they connected with other cities so that tourists are not just in Florence but are drawn to visit other places as well. Considering how small Slovenia is, we could essentially do the same. Instead of all of us offering the same thing, some can offer this, others that, and then tourists can be directed to different parts." (Conservation Consultant, 2026).

This expert sees the opportunity for Slovenia in copying good practices of other countries, that leads to more balanced tourism flows, development of other regions and reduction of negative tourism impact on vulnerable spots.

4.2.1 Potential KPIs emerging from Theme 2

- Number of pedestrians at Key Locations

This KPI measures the number of foot passengers present within the spatial areas, like Triple Bridge, Dragon Bridge, Market, Congress Square. Data could be collected through sensor-based counts during rush hours (per m² or per 100 m of space).

- Average Waiting / Crossing Time at Bottleneck Areas

  Measures the average time required for pedestrians to cross defined bottleneck zones (e.g. Triple Bridge area) during rush hours. It could be measured through timed observation studies, where multiple crossings are recorded and then averaged under consistent conditions (same location, time window, and flow direction).

- Visitor Dispersion Rate

This KPI measures the dispersion pattern of visitors between central zones of the city and other selected sites. It can be presented through percentage of total visitor number concentrated around main UNESCO zones compared to the number of visitors in the areas outside of these central areas. Data can be obtained through attraction counts, visitor surveys, tourist statistics, mobile data.

4.3 Theme 3: Community Well-being, Local Needs, and Governance

The theme of Community Well-being, Local Needs, and Governance has arisen among the participants' perceptions as very relevant, especially when viewed in the light of Plečnik's architectural legacy and his human-scale approach. He created the city for its inhabitants, and that is the value that has to be preserved.

Conservation Consultant (2026) below argues that the central city areas, those that are exposed to the tourism pressures the most, are being transformed over time, offering more gastronomic services for visitors, than authentic amenities intended for locals:

“[...].But well, right there in that part, from the Triple Bridge to the Shoemakers’ Bridge, it was always like that. [...]... but sometimes there were cafes, whereas now it is all about coffee and food; there is some food everywhere all the time, and it somehow loses that local feeling. [...]... so that you feel like you are somehow foreign. [...]. This area has become too similar to all the others and lacks local character. Yes, this is the touristification that consequently affects gentrification.. [...].. the services in the city are expensive, especially in Ljubljana.. [...]. it is all unsustainable, if you want to have a top-notch offer... somehow it doesn't add up for you... actually, I always hang out in the same places, and as a rule, they are never in the center [...]..From a personal perspective, of course, the masses of people; the fact that I cannot sit down in a café and have a drink normally because it is too crowded. [...] Now it seems to me that they are primarily focusing on as much commercialization as possible and less on what we, the local residents, actually need ” (Conservation Consultant).

Conservation Consultant considers the loss of authentic facilities that originally derive from Plečnik’s vision of how the city's life should be, a matter of concern for the local community.

“I also notice that new spots open and close very quickly. With the rise of these things, rents are going up too. It’s simply no longer sustainable if you want to maintain a high-quality, premium offer while paying high costs—it just doesn't add up for you. And it's not just about the Plečnik area; generally, I was surprised to see some long-standing local taverns or businesses close because they could no longer cope. Then new ones open, along with these shops selling local products, but it goes very fast, they come and go. .. [...].... It's like things change very quickly, with new content, new pubs, new bars, and new shops every time” (Conservation Consultant).

Here, the expert focused on the increased prices in the most visited areas, that impacts the locals, while old businesses close due to high costs, new one open and close quickly, causing the space to lose its stability and traditional dimension.

In the following citation, a Project Manager from STO, sees market as vulnerable spot, threatening to lose its primary function as a place for locals to purchase regional food:

“.. [...].. Because market was primarily intended for locals, and we need to be careful that this function is not lost. I don't know, theoretically, if it came to the point where they started selling some artificial souvenirs... [...]... or overly touristic souvenirs, let the market remain a market so that... [...] with the milk vending machine, I think that's great. .. [...].... but we need to be careful that it does not lose its meaning and become a tourist market, and that it does not become just a venue for mega-events.. [...]. For instance, as we mentioned

before the market, even from the perspective of a very high percentage of visitors or, ultimately, the potential loss of its function.. [...]. The market should remain a marketplace, so that.. [...]. even with the Open Kitchen event, if it becomes overly crowded, it can begin to deter local residents. It seems to me that this is generally a problem in all tourist destinations: as soon as there is too much crowding, people develop an aversion. Locals no longer go there, as they prefer to go elsewhere, and in the summer, you do not even bother going to the Open Kitchen because it is simply so crowded that you have no desire to go. So theoretically, this could be a challenge for the future " (Project Manager).

"[...] Then also this saturation of space, purely at the quantitative level—meaning, it is a saturated space, and it repels locals, so they leave. [...].. And also, for example, additional infrastructure, if new stalls or similar structures start appearing due to tourism, that is also an indicator to consider—the addition of objects, the addition of physical structures, such things. There would probably be more to add. [...] We have the Center for Creativity here, a creative industry space inside, with many projects, and it's basically a nice space, just like the UNESCO site. All in all, given the problems in the world, we are happy that we are doing this work. [...].. And yes, this situation is a double-edged sword. You want the site to be known, but at the same time, it means more people will come" (Štoka).

In the context of local community wellbeing, Štoka sees additional infrastructure as threatening. The physical clutter disrupts the spatial balance and makes area less suitable for locals.

In the following citation, Conservation Consultant gives an example of Rome, comparing it to her personal experience of not visiting the most prominent areas in Ljubljana's center:

"Like, for example, in Rome, it is unsustainable there, as it increases in the summer months, well, it becomes very inconvenient for the local people. There was a gentleman there who said – I have lived in Rome for 40 years, in the last 16 years I have not been to the Trevi Fountain, I don't go there, 16 years.. [...]. as I would say that I haven't been to Tromostovje for 16 years because it is unsustainable... and that is what we wouldn't want to happen.." (Conservation Consultant).

These insights strongly emphasize the necessity for different approach, regarding social aspect of tourism that excludes locals from central areas. They do not feel comfortable visiting those very crowded spots.

4.3.1 Potential KPIs emerging from Theme 3

- Number of local users in central areas

This KPI counts the number of local residents present at central UNESCO and buffer areas, during defined observation periods, identified through short on-site surveys (residence self-declaration). It reflects the local use of central areas.

- Number of business closures in central areas per year

This indicator documents the number of permanently closed businesses in central tourist areas within one year. It reflects changes in the stability of local economic activity.

- Number of local-oriented facilities in central market area

This KPI counts the number of facilities in the central market area that provide goods and services for daily use of local residents. It reflects the presence of functions intended for residents.

4.4 Theme 4: Interpretation, Visitor Experience, and Urbanism

This theme covers the valuable perspectives of participants in this research regarding visitor experience, the interpretation of cultural heritage, and human-centered urbanism that Plečnik created to be for the people.

Porok indicated that visitors to Plečnik House are truly interested in this topic, therefore their behavior is respectful:

“I must say that we are quite lucky here that the general visitors, if we could define them, are very cultural and very polite.. [...] Plečnik House is a little bit away from the center of Ljubljana. [...].. and those who make the effort to come here are, of course, coming purposefully to see it.. [...]. they probably also have the prior information that this is a special museum.. [...]. that this is the architect's personal house, his home [...]. they are respectful. [...]... yes, they are very respectful..” (Ana Porok).

It is clear from this citation that there is a correlation between tourists coming from central city areas to the Plečnik House and a high level of respect for this site, indicating that most of them are intentional visitors. This museum offers more personal experience of Plečnik’s life, which is certainly a unique visitor experience.

Porok further emphasizes the importance of education, including all segments of visitors. Systematic approach to this matter results in important socio-cultural component, which is a higher level of respect for the heritage, and contribution to the increased transparency of Plečnik's heritage sites.

“I think that in the Plečnik House we are already trying to do something, especially regarding the education of the broadest public. I think it is important that the youngest are also included if possible, or even families, and they contribute to the greater visibility of

Plečnik's work... and also to wider awareness, so that we then know how to take care of this heritage. [...].. I myself was also surprised at first during the renovation when we were introducing these programs for the youngest, just how, with the right approach, even in kindergarten their educators told them that they would be seeing something special." (Porok).

Project Manager reflects on Plečnik's idea of building the city for people and their daily lives, and that is how it should be communicated, rather than only in the context of visitors:

"As we defined in our plan that I mentioned earlier, it is actually a comparative advantage of Slovenia compared to other destinations. [...].. That this should be communicated primarily as a value, not as a tourist attraction in this view, but as a value that supports Slovenia, which is in the first place important for us, for our heritage. [...] Plečnik saw Ljubljana as a city designed for living and connectivity. Therefore, he built this axis extending from the market along the Ljubljanica River to Trnovo, viewing the city and its architectural elements as components of connection that facilitate everyday life.." (Project Manager).

The citation emphasizes the heritage value for Slovenia in the first place, reinforcing the idea that city's primary value is in its cultural value for local community.

"It is important that the heritage lives, and it lives when people use it, starting with the locals rather than tourists so much... This value seems to me to be more important" (Conservation Consultant).

This statement highlights that the true value of heritages comes from its every day usage by the local population. Although this refers to inhabitants, often the experience of the heritage is interconnected with daily life of the residents.

4.4.1 Potential KPIs emerging from Theme 4

- Number of participants in heritage education and interpretation activities

This KPI counts the number of participants in organized educational and interpretation activities related to Plečnik's heritage, including school visits, workshops, guided educational programs, guided tours, public lectures, and family-oriented learning activities. It can be measured by counting the total number of participants registered or recorded in each educational activity over a defined period (e.g. annually).

4.5 Theme 5: Carrying Capacity and Management of Visitor Flows

This theme represents the perspectives of experts regarding the management of visitor flows, seasonal dispersion and carrying capacities. They highlighted the necessity for

better communication and cooperation between institutions, decision makers and stakeholders, monitoring issues, as well as the regulations between tourism development, heritage protection, local community needs, that need to be balanced. These highly relevant insights are valuable for this research.

In the following citation, the Conservation Consultant highlights the danger of focusing too much on short-term gains, without having a right approach to planning and management of the city:

“Too much commercial content intended for instant sensations or instant visitors, and too little sustainable return to the heritage.. [...]. I don't know if this is a consequence, it doesn't seem to me to be the way the city is managed, this is the current modus operandi of the municipality. I am not really worried, yet, I don't think it is very critical for now, but there will be a crisis again, intercontinental travel will not be possible, and there will probably be a lot of pressure on things that are closer and more easily accessible. [...]... when there are no flights.. [...].. we will see how sustainable this is.. [...]. Areas most exposed to the pressure of tourism are certainly those that are open public spaces: the Tromostovje, the markets.” (Conservation Consultant).

This observation shows the necessity for the change in city’s current approach towards governing the heritage sites. Vulnerable areas like the Triple bridge and the market are the most exposed to the increased and unregulated instant visitors, while return to the heritage is inadequate.

Project Manager further states the importance of analyzing the visitor groups, understanding seasonality in order to spread visitation to the low season:

“We always look at the structure of the guests, by age, then also whether they are domestic guests, foreign guests, which are the source markets, so in this way we try to determine (trends), and we always look at the seasonality of visits through the Gini coefficient. This is also integrated into NIST, and we have been dealing with this recently at STO, and we are also embarking heavily on a project for deseasonalization where we will try to make a campaign already this year that would better promote Slovenia in the winter months. So, to focus exactly on the off-season, in the sense of November to February, I think the current goal is not just the shoulder season, but really just the deadest months...” (Project manager).

Seasonality is one of the issues that need to be regulated through adequate management planning, promotions, and analysis.

As highlighted by Toman Kracina, cooperation between institutions is good, but could be improved. Taking the example of the Plečnik house, she states that visitor numbers should be determined based on the available capacities:

“The fact that these institutions (tourism stakeholders, heritage protection, urban planning, and policy-making in Ljubljana) are aligned was something we realized when we were working on the (Plečnik) house renovation this time; we cooperated with all these stakeholders.. [...].. Could stakeholder cooperation improve? For example, if you decide that 15 people are too many to visit at one time—for a tour of the house—you reduce the number to 10. Currently, the limit is 7 people at once. These are tiny groups.” (Toman Kracina).

This indicated that carrying capacity is an important measure and should be tailored to the specific context and location.

Porok provides a valuable insight from her experience of a curator at Plečnik house. She explained in that specific example how carrying capacity has to be determined, especially to highly sensitive sites:

“So that when we actually opened the renovated Plečnik House, which was in September 2015, the number of visitors increased quite rapidly, and it reached some sort of peak before the corona virus, in 2019, I think it reached around 18,000 visitors. Then, of course, during the corona and post-corona years, there was a significant drop, and I think, the last 2 years it has been reaching a good 16,000, so it is somewhat constant.. [...].. But this is really a challenge for us, because we wanted to present this originally preserved section in as authentic a form as possible. [...]... meaning the visitor is transported back to Plečnik's time, which is why we really have this limit of 7 people in a group, and of course it is quite a challenge in the summer months...” (Porok).

Balancing between high interest of visitors (especially during summer months) and the authentic experience needs to be a priority. Although Plečnik House has restricted access and serves as a localized example, it demonstrates how good management practices result in visitor satisfaction, economic benefits, and better protection of the heritage.

4.5.1 Potential KPIs emerging from Theme 5

- Percentage of off-season visitors (seasonality indicator)

Calculated as the proportion of total annual visitors recorded during off-season months (e.g. November–February) in relation to total annual visitor numbers.

- Number of inter-institutional meetings per year

Count of formal meetings held within one calendar year between relevant institutions involved in heritage management, tourism governance, and urban planning, based on official meeting records or documented agendas.

4.6 Theme 6: Institutional Integration and Collaboration in Heritage

This theme addresses crucial issues raised among participants in this research. Stakeholder collaboration and institutional integration in heritage management are necessary for sustainable tourism development and cultural heritage protection. A unified approach ensures balance between the economic benefits of tourism and preservation of cultural heritage.

Porok points out the essential need for closer cooperation, although she states that current situation is good. Mentioning the country as a boutique destination that aims to create luxury experience, closer collaboration and communication are indispensable:

“It could be improved (the alignment of tourism stakeholders). Here, the coordinator is exactly Mr. Štoka from MAO. I mean, as Plečnik House, we also have joint programs, or we provide support to Ljubljana Tourism, because we think, as you say, a boutique destination primarily preparing these 5-star experiences. [...].. and I know that a program like, for example, 'Master Plečnik' is an in-depth program for a smaller group. Some programs already exist, but yes, it would certainly be possible to improve this joint networking of all Plečnik stakeholders and managers. Now, since Plečnik’s House itself is not directly a UNESCO heritage site, we are an affiliated member, so there are some meetings a few times a year. Maybe we could address inquiries more quickly. [...].. I would say we need tighter integration, although Tomaž would know more about this. We definitely have support for Plečnik’s heritage. [...] both from the City of Ljubljana, which absolutely recognizes that Plečnik’s heritage is worthy of all protection and promotion, and absolutely at the national level. But yes, maybe some closer, more connected collaboration is somewhat lacking.” (Porok).

This highly relevant citation from Porok stresses the importance of systematic approach to promotion planning, protection, and tourism development.

Such a successful collaboration is visible from the citation below, where Project manager mentions practical products developed with Tourism Ljubljana:

"...and it would be great if we could collaborate a bit more in the future..[...] But at Ljubljana Tourism they have a product about Plečnik, 'Plečnik's Ljubljana', which is included in this collection of Slovenia Unique Experiences [...].. The product is called 'Master Plečnik', that's the working name. They founded this 3 or 4 years ago, and it's an experience where a guide takes a small group and then walks them through Plečnik’s Ljubljana to Križanke, and at the end, they finish at Plečnik's House and a refreshment [...] This experience has received the label 'Edinstvena doživetja Slovenije', or Slovenia Unique Experience, which our expert commission recognized this time as truly unique and very, very representative of Ljubljana's heritage, or for experiencing Ljubljana as a city. So, this is a big thing for us, that we can highlight one of the most unique experiences in Slovenia, of which there are currently 36 in the collection..." (Project Manager).

It is clear that engagement, expertise, good communication, systematic and analytical approach, and creativity can result in very good tourism product. Joint efforts between tourism boards and heritage managers indeed contribute to boutique and unique tourism experience.

Štoka emphasizes the necessity for upgrading existing management plans:

“Right now, as far as management is concerned, we are still at a stage where we need to upgrade the management plans [...] every management plan has an action plan, I mean, how to put it – a good management plan is such a piece that it has short-term, medium-term, and long-term goals.. [...]. and currently we need to prepare new ones, and basically, I am now dealing with preparing recommendations for the operators, for the management plans of these individual units…” (Štoka).

This highlights how successful institutional cooperation relies on clear guidelines, and it is the way to achieve long-term sustainable tourism development.

4.6.1 Potential KPIs emerging from Theme 6

- Number of collaborative heritage tourism experiences per year

This KPI counts the number of heritage tourism experiences developed jointly by tourism organisations and heritage institutions within one year.Number of inter-institutional meetings per year

- Number of updated or revised management plans for heritage sites

This KPI is measured through the count of management plans that are formally revised, updated, or newly adopted within a given time period for heritage-related sites or units (could be done in period of 5 years).

5 DISCUSSION

Revisiting the research aim of this thesis, this study develops a set of KPIs derived from themes identified in expert interviews, in order to suggest recommendations for balancing tourism development and the preservation of Plečnik’s cultural heritage. This chapter evaluates the results of the thematic analysis with regard to the literature from the first part of this thesis. The interviews generated new insights into the preservation of Plečnik's cultural heritage, specifically highlighting the tension between rapid tourism development and social well-being of the local community.

The inscription of "Plečnik's Ljubljana" at UNESCO World Heritage List in 2021 represented recognition of its exceptional and unique human-centered urban design. Findings in Chapter 4 reveal the gap between heritage value and current management situation, emphasizing the need for improvement. This discussion integrates six themes in relation to research questions and the literature review, particulary focusing on visual pollution, spatial bottlenecks in the most visited central areas, and institutional challenges related to monitoring and governance.

Table 1 synthesises the existing literature on negative tourism impacts on cultural heritage, classifying identified metrics into socio-cultural, environmental-physical, and economic-governance pillars. This table serves as a reference for comparisons between these findings and results that emerged from expert interviews conducted for the purposes of this thesis.

In the physical-environmental pillar, the literature identifies structural degradation, such as cracks and ground settlement, as a direct indicator of physical deterioration of cultural heritage sites. In addition to monitoring of structural conditions, it also emphasizes the relationship between number of visitors and ambient parameters (temperature, humidity, noise levels, air quality, vibrations etc), as well as a direct impact of visitors on degradation of cultural heritage sites (Badia & Donato, 2013; Masciotta et al., 2016).

In contrast, the expert interviews revealed a broader set of concerns. Visual pollution emerged as one of the main issues, including billboards, commercial digital screens, advertisements, inappropriate restaurant furniture, and unnecessary signalization. The results further describe the current gastronomic offer as overwhelming, threatening to obscure heritage sites, and make space monofunctional, causing social exclusion of local residents. Vandalism acts are noted as occasional, suggesting that this would intensify in the case of extreme visitation.

While the literature focuses on measurable physical and environmental forms of deterioration of cultural heritage structures, the findings from this research bring attention to visual and spatial component of Plečnik's cultural heritage sites. This indicates a broader view on the deterioration of heritage structures, that goes beyond structural damage, by pointing out the complex problem of commercialization of buffer areas. Results stressed touristification as adverse for cultural heritage at both levels, physical and social, since it affects the lives of local population.

In socio-cultural pillar of Table 1, visitor satisfaction rate and visitor attendance rate are identified as relevant elements to be monitored in relation to cultural hetitage sites. The first measures visitors' subjective satisfaction, while the second captures the volume and density of visitors, which is essential for understanding tourism flows, carrying capacity, and overcrowding. Moreover, the literature highlights local resident participation in culutral life and decision-making process with regard to CHSs as crucial. It also addresses

the assessment on how well intangible assets are protected and the risk of their commodification (Badia & Donato, 2013; UNESCO World Heritage Centre, 2005).

The interview analysis reveals that local community should be included in entire decision-making process regarding Plečnik's cultural heritage, and that Plečnik's idea of designing the city for its residents should keep residents in primary focus. Results reflect concern about potential commodification and touristification of central areas due to an increasing amount of instant tourist content, which is in alignment with the literature emphasizing resident inclusion as crucial dimension of heritage governance. On the other hand, findings point out the importance of education as a contribution to the cultural heritage protection. The study demonstrates the inseparable relationship between residents and Plečnik's Ljubljana, where their participation in decision-making process regarding their cultural heritage transcends simple engagement and becomes the expression of shared responsibility.

The economic pillar of Table 1 identifies several metrics as relevant for economic aspects of cultural heritage sites governance. It focuses on measuring the effectiveness of management in early detection of potential threats (UNESCO World Heritage Centre, 2005). It also indicates the external profit leakage as a potential threat for cultural heritage, since it emphasizes the danger for tourism revenue due to foreign ownerships and import of goods (Al-Smadi & Al-Saad, 2022; Hassan et al., 2024). Further, as shown in the Table 1, literature identifies indicators related to the ability of local businesses to supply local tourism with local goods and labor. The economic-governance pillar also emphasizes the extent to which proposed monitoring tools are actively implemented and measured through the performance system implementation rate. Literature identifies the importance of turning plans into the funded projects, with regard to cultural heritage sites. This shows the necessity of actually materializing plans into concrete actions (Al-Smadi & Al-Saad, 2022; Badia & Donato, 2013; Hassan et al., 2024). Academic sources finally underline the need for measuring the extent to which sites use world heritage funds, which reflect the actual benefits for heritage properties from these funds (UNESCO World Heritage Centre, 2005).

The findings from the expert interviews reflect the context-specific nature of the necessity for sustainable tourism development with regard to protected properties. They suggest more communication between relevant institutions in the context of tourism and protection. This is in alignment with literature findings in relation to early detection of potential threats, since better communication is fundamental in mitigation of these threats. Further, interviews indicate the need for resolving the problem of tourism seasonality, which consequently would contribute to heritage funds that are important for the protection of cultural sites. The interview findings suggest the development of tourism carrying capacities matter for understanding governance of CH sites, which aligns and broadens the evidence from the literature of the ability of local businesses to supply local tourism with local goods and labor. This directly would influence the external profit leakage that was detected as a problem in existing literature regarding cultural heritage sites management.

Upgrading existing management plans emerged as a necessity from expert interviews, and that broadens the literature findings.

While existing literature provides a structured framework for monitoring economic-governance indicators, the interview findings of Plečnik's Ljubljana indicates that inter-institutional coordination represents a critical challenge in translating these frameworks into practice.

The findings across the three pillars suggest a pattern where Plečnik's cultural heritage is shaped by the relationship between physical and spatial pressures, governance-related potential for improvement, and socio-cultural impact. Although the existing literature identifies frameworks for managing these dimensions, the case of Ljubljana demonstrates coordination challenges and governance gaps, leaving areas for improvement.

An example of Florence that emerged from interviews and can serve as a benchmark, represents the model of good practice, where the cultural heritage of that city together with its surrounding areas, is managed through coordinated governance, distribution of tourism flows, clearly defined and synchronized working groups, and cross-institutional cooperation. These practices reinforce the relevance of KPIs proposed in previous chapter related to the effective management of seasonal fluctuations, inter-institutional cooperation, and visitor dispersion.

In contrast, the example of Rome that arose from the interviews, illustrates the consequences of excessively concentrated tourism flows, that result in exclusion of local residents. These findings further validate the relevance of proposed KPIs, for example the number of local users in central areas, and the number of local-oriented facilities in central market area.

This study's primary limitation is the sample size. Six expert in-depth personal interviews, while providing valuable and professional insights based on their specialized knowledge, did not capture the full diversity of opinions. Second limitation refers to the size of Ljubljana, since it is a small capital, the results might not be relevant for other UNESCO destinations situated in larger cities. The results of this study cannot be generalized to wider population.

6 CONCLUSION

This study aimed to evaluate the challenges of preserving Plečnik's Cultural heritage in Ljubljana in the context of tourism growth. Through comprehensive literature review and in-depth expert interviews, valuable insights were generated that contributed in answering research questions and shaping recommendations and KPIs.

Plečnik's human-centered urban design, which significantly shaped Ljubljana into unique place, represents a comparative advantage of the city, and Slovenia as a whole. But this value should be managed carefully. Tourism represents an important development opportunity, it has to be planned strategically, respecting the needs of the residents, balancing between all three pillars: socio-cultural, environmental-physical, and economic-governance.

It emerged from this analysis that communication and cooperation between institutions needs to be improved. Slovenia is aiming to become a boutique high-end, green destination, while current conditions do not fully support this objective. The visual identity of the city is disrupted by uncontrolled tourist pressure during the high season. The socio-cultural component is also disturbed the most crowded in central areas. This indicates a process of "museumification" of the city centre, where the vibrant culture is gradually replaced with tourism. Plečnik's heritage originally designed for residents, is being overwhelmed with inappropriate gastronomic furniture, commercial billboards, while central areas are losing its function and become commercial spaces, avoided by local population. This also affects the visitors' experience as well, which is crucial for long-term sustainable development.

By managing tourism flows, promoting surrounding areas, and developing offers that encourage visitors to explore other parts of Slovenia, more balanced spatial distribution can be achieved. Education also plays an important role in a sustainable tourism development. Starting with younger generations, and extend to other stakeholders, it is possible to establish a stabile foundation for long-term awareness and responsible behavior towards Plečnik's heritage in Ljubljana.

Based on the findings, several practical recommendations can be proposed for improving the management of Plečnik's cultural heritage. These include stronger inter-institutional cooperation, implementation of monitoring system based on the proposed KPIs, regulation of visual pollution in UNESCO and buffer zones, visitor dispersion strategies, and preservation of local-oriented functions in the most visited central areas. Education and awarness are fundamental for strengthening sustainable tourism behaviour and respect for cultural heritage.

Ultimately, appropriate tourism regulation, determination of carrying capacities, and establishment of adequate monitoring system would support Ljubljana in progressing toward its strategic goal of sustainable and high-quality tourism development.

KEY REFERENCES

1. Badia, F., & Donato, F. (2013). Performance measurement at World Heritage Sites: Per aspera ad astra. *International Journal of Arts Management, 16*(1), 20–34.
2. CHCfE Consortium. (2015). *Cultural heritage counts for Europe: Executive summary and strategic recommendations.* International Cultural Centre. https://www.europanostra.org/our-work/policy/cultural-heritage-counts-europe/
3. Gautam, A. K., Chhabra, D., & Sharma, V. (2023). The impact of tourism on the preservation of UNESCO cultural heritage sites in India 2023. *International Journal for Multidimensional Research Perspectives, 1*(4), 41–49. https://www.researchgate.net/publication/379411813_The_Impact_of_Tourism_on_the_Preservation_of_UNESCO_Cultural_Heritage_Sites_in_India_2023
4. Masciotta, M. G., Ramos, L. F., Lourenço, P. B., & Matos, J. A. C. (2016). Development of key performance indicators for the structural assessment of heritage buildings. *E-Journal of Non-Destructive Testing.* https://www.researchgate.net/publication/305109567_Development_of_Key_Performance_Indicators_for_the_Structural_Assessment_of_Heritage_Buildings
5. Republic of Slovenia. (2021*). The works of Jože Plečnik in Ljubljana – human centred urban design* (Nomination File). UNESCO World Heritage Centre. https://whc.unesco.org/en/list/1643/documents/
6. UNESCO World Heritage Centre. (2021). *The works of Jože Plečnik in Ljubljana – human centred urban design.* https://whc.unesco.org/en/list/1643/

REFERENCE LIST

1. Adie, B. A., Falk, M., & Savioli, M. (2019). Overtourism as a perceived threat to cultural heritage in Europe. *Current Issues in Tourism*, *23*(14), 1737–1741. https://doi.org/10.1080/13683500.2019.1687661
2. Ahmed, S. K. (2024). The pillars of trustworthiness in qualitative research. *Journal of Medicine, Surgery, and Public Health*, *2*, Article 100051. https://doi.org/10.1016/j.glmedi.2024.100051
3. Ahmed, S. K., Mohammed, R. A., Nashwan, A. J., Ibrahim, R. H., Abdalla, A. Q., Ameen, B. M. M., & Khdhir, R. M. (2025). Using thematic analysis in qualitative research. *Journal of Medicine, Surgery, and Public Health*, *6*, Article 100198. https://doi.org/10.1016/j.glmedi.2025.100198
4. Akova, O., & Atsiz, O. (2019). Sociocultural impacts of tourism development on heritage sites. In D. Gürsoy & R. Nunkoo (Eds.), *The Routledge handbook of tourism impacts* (pp. 252–264). Routledge. https://doi.org/10.4324/9781351025102-20

5. Al-Smadi, M., & Al-Saad, S. (2022). Analyzing outbound tourism as a form of economic leakage: A qualitative approach. *African Journal of Hospitality, Tourism and Leisure*, *11*(4), 1317–1333. https://doi.org/10.46222/ajhtl.19770720.293
6. Architectuul. (n.d.). *Ljubljana Central Market*. https://architectuul.com/architecture/ljubljana-central-market
7. Averdieck, W. (2025, September 25). *Case study: A port's proactive community engagement using IoT linked to a rugged PM2.5 and noise monitoring system* [Paper presentation]. CEM Conference, Ljubljana, Slovenia.
8. Blue Shield International. (n.d.). *The importance of cultural heritage*. https://theblueshield.org/why-we-do-it/the-importance-of-cultural-heritage/
9. Bogner, A., Littig, B., & Menz, W. (Eds.). (2009). *Interviewing experts* (1st ed.). Palgrave Macmillan. https://doi.org/10.1057/9780230244276
10. Capella University. (n.d.). *The role of the qualitative researcher.* https://campustools.capella.edu/BBCourse_Production/PhD_Colloquia_C4C/Track_3/phd_t3_u06s1_qualrole.html
11. Carter, N., Bryant-Lukosius, D., DiCenso, A., Blythe, J., & Neville, A. J. (2014). The use of triangulation in qualitative research. *Oncology Nursing Forum, 41*(5), 545–547. https://doi.org/10.1188/14.ONF.545-547
12. Central European University. (n.d.). *Concept and history of cultural heritage*. CEU Cultural Heritage Studies. https://culturalheritagestudies.ceu.edu/concept-and-history-cultural-heritage
13. Cerisola, S., & Panzera, E. (2024). Heritage tourism and local prosperity: An empirical investigation of their controversial relationship. *Tourism Economics*, 31(5), 964–983. https://doi.org/10.1177/13548166241234099
14. Coccossis, H., Mexa, A., Collovini, A., & Parpairis, A. (2001, December). *Defining, measuring and evaluating carrying capacity in European tourism destinations: Final report* (Report No. B4-3040/2000/294577/MAR/D2) EUROPARC. https://www.europarc.org/wp-content/uploads/2020/03/tcca_en.pdf
15. Cocola-Gant, A. (2015, August). *Tourism and commercial gentrification.* [Paper presentation] RC21 International Sociological Association Conference, Urbino. https://www.researchgate.net/publication/313708294_Tourism_and_commercial_gentrification
16. Council of Europe. (2017*). European Cultural Heritage Strategy for the 21st Century.* https://www.coe.int/en/web/culture-and-heritage/strategy-21
17. de Marzo, C. (2019, June). *Ensuring an effective monitoring of tourism sustainability in the Mediterranean region.* UN Environment – MAP – Plan Bleu. https://planbleu.org/wp-content/uploads/2019/06/ensuring_effective_monitoring_web.pdf
18. DeJonckheere, M., & Vaughn, L. M. (2019). Semistructured interviewing in primary care research: A balance of relationship and rigour. *Family Medicine and Community Health, 7*(2), e000057. https://doi.org/10.1136/fmch-2018-000057
19. Dubrovnik Visitors. (n.d.). *Locality 1*. https://dubrovnik-visitors.hr/locality/1

20. Economic and Social Research Council. (2015). *ESRC framework for research ethics.* https://unhz.eu/Dokumente/Dokumente_tjera/ESRC%20FRAMEWORK%20FOR%20RESEARCH%20ETHICS_2015.pdf
21. Elgin, C., & Elveren, A. Y. (2024). Unpacking the economic impact of tourism: A multidimensional approach to sustainable development. *Journal of Cleaner Production*, 478, 143947. https://doi.org/10.1016/j.jclepro.2024.143947
22. European Climate Adaptation Platform. (2024*). Multifaceted approaches to protecting tangible cultural heritage.* European Environment Agency. https://climate-adapt.eea.europa.eu/en/metadata/adaptation-options/multifaceted-approaches-to-protecting-tangible-cultural-heritage
23. European Commission. (2015). Smart monitoring of historic structures (SMooHS) (Grant agreement No. 212939). CORDIS. https://cordis.europa.eu/project/id/212939
24. European Commission. (2017, December). *Special Eurobarometer 466: Cultural heritage.* https://europa.eu/eurobarometer/surveys/detail/2150
25. European Commission. (2022). *Preserving and enhancing cultural heritage with advanced digital technologies* (Topic ID: HORIZON-CL2-2021-HERITAGE-01-04). European Commission, CORDIS. https://cordis.europa.eu/programme/id/HORIZON_HORIZON-CL2-2021-HERITAGE-01-04
26. European Expert Network on Culture and Audiovisual. (2019). *Carrying capacity at sensitive cultural heritage sites.* European Commission. https://ec.europa.eu/assets/eac/culture/docs/eenc/eenc-2019-carrying%20capacity%20in%20sensitive%20cultural%20sites.pdf
27. European Movement International. (2021). *Policy position on culture and cultural heritage.* https://europeanmovement.eu/policy/policy-position-on-culture-and-cultural-heritage/
28. Faber, B., & Gaubert, C. (2019). Tourism and economic development: Evidence from Mexico's coastline. *American Economic Review,* 109(6), 2245–2293. https://doi.org/10.1257/aer.20161434
29. Fair Tourism. (n.d.). *Is overtourism impacting cultural heritage?* https://www.fairtourism.nl/en/is-over-tourism-impacting-cultural-heritage/
30. Farhan, S. L., & Ahmed, H. I. (2025). Digital technologies and their role in cultural heritage preservation: The case of Jassan Hill. In U. Lucke, S. Stieglitz, F. Uebernickel, A.-L. Lamprecht, & M. Klein (Eds.), *INFORMATIK 2025* (pp. 759–767). Gesellschaft für Informatik.
31. Fereday, J., & Muir Cochrane, E. (2006). Demonstrating rigor using thematic analysis: A hybrid approach of inductive and deductive coding and theme development. *International Journal of Qualitative Methods, 5*(1), 80–92. https://doi.org/10.1177/160940690600500107

32. G20 Culture Ministers. (2021, July 30). *Rome Declaration of the G20 Ministers of Culture.* G20 Research Group. https://g20.utoronto.ca/2021/210730-culture.html
33. Grah, B., Dimovski, V., & Peterlin, J. (2020). Managing sustainable urban tourism development: The case of Ljubljana. *Sustainability, 12*(3), 792. https://doi.org/10.3390/su12030792
34. Group of Twenty. (2021, October 31). *G20 Rome leaders' declaration.* https://www.governo.it/sites/governo.it/files/G20ROMELEADERSDECLARATION_0.pdf
35. Hassan, K., Oishi, O. V., & Afroz, F. (2024). Assessment of economic leakage in tourism system of the Sundarbans (Bangladesh). *Analele Universităţii din Oradea, Seria Geografie*, *34*(1), 77–91. https://doi.org/10.30892/auog.34106-917
36. Kamzavikend.si. (n.d.). *Tromostovje* [Photograph]. https://kamzavikend.si/ideja/tromostovje
37. Knežević Cvelbar, L. (2023). *Tourism destination management* [Lecture notes]. Faculty of Economics and Business, University of Ljubljana.
38. Kosec, M. (2024). Intermediary spaces: The small-scale urbanism of Jože Plečnik. *Docomomo Journal,* (72), 40–47. https://doi.org/10.52200/docomomo.72.05
39. Krakow City Council. (2021, September 21). *Kraków boldly introduces the principles of sustainable tourism.* Magiczny Kraków. https://krakow.pl/krakow_open_city/news/252183%2C245%2Ckomunikat%2Ckrakow_boldly_introduces_the_principles_of_sustainable_tourism.html
40. Ljubljana Castle. (n.d.). *Jože Plečnik (1872–1957).* https://www.ljubljanskigrad.si/en/castle-events/joze-plecnik/4
41. Lokas, I., Petrović, R., & Rakonjac, I. (2023). The essence of place: understanding genius loci through phenomenology. In R. Bogdanović (Ed.), *On architecture: challenges in design* (pp. 215–224). STRAND – Sustainable Urban Society Association. https://doi.org/10.60152/p2soxsi4
42. Malterud, K., Siersma, V. D., & Guassora, A. D. (2016). Sample size in qualitative interview studies: Guided by information power. *Qualitative Health Research, 26*(13), 1753–1760. https://doi.org/10.1177/1049732315617444
43. Markham, A., Osipova, E., Lafrenz Samuels, K., & Caldas, A. (2016). *World heritage and tourism in a changing climate*. UNESCO Publishing. https://whc.unesco.org/en/tourism-climate-change/
44. Mesas-Carrascosa, F. J., Verdú Santano, D., Meroño de Larriva, J. E., Ortíz Cordero, R., Hidalgo Fernández, R. E., & García-Ferrer, A. (2016). Monitoring heritage buildings with open source hardware sensors: A case study of the Mosque-Cathedral of Córdoba. *Sensors, 16*(10), 1620. https://doi.org/10.3390/s16101620
45. Museum of Architecture and Design (MAO). (n.d.). *Plečnik's Ljubljana is a phenomenon of the 20th-century urban landscape.* https://mao.si/plecnikova-ljubljana-je-fenomen-urbane-krajine-20-stoletja/

46. Nasir, O. (2025, February 21). *Le Corbusier's architectural philosophy: form, function & modernism*. Parametric Architecture. https://parametric-architecture.com/le-corbusier-form-function-and-modernism-in-architecture/
47. National Alliance for Museums, Health and Wellbeing. (n.d.). *Museums & Wellbeing Alliance*. https://museumsandwellbeingalliance.wordpress.com/
48. Otani, T. (2020). Functions of qualitative research and significance of the interpretivist paradigm in medical and medical education research. *Fujita Medical Journal, 6*(4), 91–92. https://doi.org/10.20407/fmj.2020-018
49. Pavlić, I., & Portolan, A. (2015). Irritation index, tourism. In J. Jafari & H. Xiao (Eds.), *Encyclopedia of Tourism*. Springer International Publishing. https://doi.org/10.1007/978-3-319-01669-6_564-1
50. Peeters, P. (2007). The impact of tourism on climate change. In B. Amelung, K. Blazejczyk, & A. Matzarakis (Eds.), *Climate change and tourism: Assessment and coping strategies* (pp. 41–55). Maastricht University.
51. Peeters, P., Gössling, S., Klijs, J., Milano, C., Novelli, M., Dijkmans, C., Eijgelaar, E., Hartman, S., Heslinga, J., Isaac, R., Mitas, O., Moretti, S., Nawijn, J., Papp, B., & Postma, A. (2018). *Overtourism: impact and possible policy responses* (Research for TRAN Committee). European Parliament, Policy Department for Structural and Cohesion Policies. https://www.europarl.europa.eu/RegData/etudes/STUD/2018/629184/IPOL_STU(2018)629184_EN.pdf
52. Perkins, R. (n.d.). *Overtourism in Dubrovnik*. Responsible Travel. https://www.responsibletravel.com/holidays/dubrovnik/travel-guide/overtourism-in-dubrovnik
53. Pervin, N., & Mokhtar, M. (2022). The interpretivist research paradigm: A subjective notion of a social context. *International Journal of Academic Research in Progressive Education and Development, 11*(2), 419–428. http://dx.doi.org/10.6007/IJARPED/v11-i2/12938
54. Proietti, M., Bonini, S., & Bonini, P. (2024). A systematic analysis of overtourism at heritage sites: A review of the state-of-the-art. *Heritage Science, 12*, Article 18. https://doi.org/10.1007/s00168-024-01280-3
55. Rahimi, S., & Khatooni, M. (2024). Saturation in qualitative research: An evolutionary concept analysis. *International Journal of Nursing Studies Advances, 6*, 100173. https://doi.org/10.1016/j.ijnsa.2024.100173
56. Rendle, K. A., Abramson, C. M., Garrett, S. B., Halley, M. C., & Dohan, D. (2019). Beyond exploratory: A tailored framework for designing and assessing qualitative health research. *BMJ Open, 9*(8), Article e030123. https://doi.org/10.1136/bmjopen-2019-030123
57. Saka, R. O., Osademe, G. C., & Ononokpono, N. J. (2023). Exploratory research design in management science: A review of literature on conduct and application. *International Journal of Research and Innovation in Social Science, 7*(4), 1384–1395. https://doi.org/10.47772/IJRISS.2023.7515

58. Scheyvens, R. (2011). The challenge of sustainable tourism development in the Maldives: Understanding the social and political dimensions of sustainability. *GeoJournal, 76*(2), 167–181.
59. Shaari, M. S., Salha Tunku Ahmad, T., & Razali, R. (2018). Tourism Led-Inflation: A case of Malaysia. *MATEC Web of Conferences, 150*, 06026. https://doi.org/10.1051/matecconf/201815006026
60. Shaheen, M., Sajjad, H., Ullah, M., & Durrani, S. A. (2024). The role of UNESCO World Heritage sites in promoting sustainable tourism. *IJCISSS, 9*(8), 1–10. https://ijciss.org/index.php/ijciss/article/view/1254/1415
61. Solimar International. (2018, November 28). *The importance of measuring tourism impacts.* https://www.solimarinternational.com/the-importance-of-measuring-tourism-impacts/
62. Somnuxpong, S., & Chiarasumran, N. (2024). A study of the environmental, economic, and social/cultural impacts of historical and cultural tourism in the old town district of Chiang Mai: Evaluating the sustainable development possibilities for a destination under consideration as a world heritage site. *Journal of Sustainability Research*. https://doi.org/10.20900/jsr20240047
63. Statistical Office of the Republic of Slovenia. (2025, March 18). *Arrivals and overnight stays of domestic and foreign tourists, municipalities, Slovenia, annually* (Table 2164525S). [Data set]. SiStat Database. https://pxweb.stat.si/SiStatData/pxweb/en/Data/-/2164525S.px
64. Stepanchuk, A., Gafurova, S., & Latypova, M. (2020). "Genius Loci" as a resource for the development of historical areas of the city. *IOP Conference Series: Materials Science and Engineering, 890*(1), 012013. https://doi.org/10.1088/1757-899X/890/1/012013
65. Surata, I. K., Sumartana, I. M., & Utama, I. G. B. R. (2024). The impact of cultural tourism on local traditions. *JPPI (Jurnal Penelitian Pendidikan Indonesia), 10*(4), 672–683. https://doi.org/10.29210/020244780
66. Suyadnya, I. W. (2021). Tourism gentrification in Bali, Indonesia: A wake-up call for overtourism. *Masyarakat: Jurnal Sosiologi, 26*(2), 163–190. https://doi.org/10.7454/MJS.v26i2.12930
67. Szromek, A. R., Kruczek, Z., & Walas, B. (2020). The attitude of tourist destination residents towards the effects of overtourism—Kraków case study. *Sustainability, 12*(1), 228. https://doi.org/10.3390/su12010228
68. Tajik, O., Golzar, J., & Noor, S. (2024). Purposive sampling. *International Journal of Education & Language Studies, 2*(2), 1–11. https://doi.org/10.22034/ijels.2025.490681.1029
69. Tomaževič, M., Žnidarič, A., Klemenc, I., & Lavrič, I. (n.d.). *The influence of traffic induced vibrations on historic stone masonry buildings.* Slovenian National Building and Civil Engineering Institute. https://www.irbnet.de/daten/iconda/CIB1090.pdf

70. Tragento Editorial Team. (2025, November 21). *Dubrovnik named the best sustainable tourist destination in the world for 2025.* https://tragento.com/en/dubrovnik-proglasen-najboljom-odrzivom-turistickom-destinacijom-na-svijetu-za-2025/
71. Trošt, T. (2022). *Research methods and techniques.* [Lecture notes].Faculty of Economics, University of Ljubljana.
72. UN Human Rights Office of the High Commissioner. (n.d.). *Special Rapporteur in the field of cultural rights*. https://www.ohchr.org/en/special-procedures/sr-cultural-rights
73. UNESCO Institute for Statistics. (2023). *SDG 11 synthesis report 2023.* UNESCO. https://uis.unesco.org/sites/default/files/documents/sdg_11_synthesis_report_2023_v11_0_4.pdf
74. UNESCO World Heritage Centre. (2005). *Performance indicators for World Heritage programmes* (WHC-05/29.COM/12). https://unesdoc.unesco.org/ark:/48223/pf0000389314
75. UNESCO World Heritage Centre. (n.d). *Compendium on Outstanding Universal Value.* https://whc.unesco.org/en/compendium/?&Documents=1&action=list&id_faq_themes=962
76. UNESCO World Heritage Committee. (2006). *Performance indicators for World Heritage Programmes* (WHC-06/30.COM/12). https://whc.unesco.org/document/6567
77. UNESCO. (2021). *Management plan for the works of Jože Plečnik in Ljubljana – Human centred urban design.* UNESCO World Heritage Centre. https://whc.unesco.org/en/list/1643/documents/
78. UNESCO. (2022, April 19). Cultural heritage: 7 successes of UNESCO's preservation work. https://www.unesco.org/en/articles/cultural-heritage-7-successes-unescos-preservation-work
79. United Nations. (n.d.). *The 17 goals.* Sustainable Development Goals. https://sdgs.un.org/goals
80. University of the Built Environment. (2024, October 23). *Human-centred design 101: Here's what it means for architecture.* https://www.ube.ac.uk/whats-happening/articles/human-centered-design/
81. UNWTO. (n.d.). *Tools for measuring tourism seasonality.* https://www.untourism.int/sustainable-development/unwto-international-network-of-sustainable-tourism-observatories/tools-tourism-seasonality
82. USAID Center for Development Information and Evaluation. (1996). *Performance monitoring and evaluation tips: Conducting key informant interviews* (No. 2). U.S. Agency for International Development. https://www.cdc.gov/training-development/media/pdfs/2024/04/Performance-monitoring-evaluation-tips-key-informant-interviews.pdf

83. von Soest, C. (2023). Why do we speak to experts? Reviving the strength of the expert interview method. *Perspectives on Politics, 21*(1), 277–287. https://doi.org/10.1017/S1537592722001116
84. Waters, S. (2017, January 1). Classical / Classical Revival / Neo-Classical: *An architectural style guide.* Royal Institute of British Architects. https://www.architecture.com/knowledge-and-resources/knowledge-landing-page/classical-classical-revival-neo-classical
85. Zimmel, P. (2025, September 25). *Invisible impact and smart air quality monitoring according to standard reference methods* [Lecture]. CEM Conference, Ljubljana, Slovenia.
86. Żmudzińska-Nowak, M., & Wałek, M. (2024). Losing Genius Loci in Cultural Heritage Sites – Landscape of Defensive Castle Open-Air Museums of the Jurassic Belt, Poland. *Muzeológia a kultúrne dedičstvo, 12*(3), 43–62. https://doi.org/10.46284/mkd.2024.12.3.4

APPENDIX

Appendix: Questions for expert interviews

Research Overview

The goal of this research instrument is to explore current dynamics between tourism and Plečnik's cultural heritage in Ljubljana, from the perspective of key stakeholders. The interview is designed as an exploratory tool to identify possible tourism impacts, how the site's situation has evolved since its UNESCO inscription in 2021, and to discover context-specific indicators. The principal mission is to develop monitoring tools and create an action plan to mitigate these impacts.

Pre-Interview Protocol and Ethics

All participants were informed that their participation is voluntary, that they could skip any question, or stop the interview at any moment. Participants were asked for their permission to record the conversation to ensure insights were captured accurately.

Questions

1. Could you please describe your current role, and how your daily responsibilities align with the management or preservation of Plečnik's cultural heritage? (additional: How long have you been involved with these sites?)

2. Are tourism impacts on Plečnik's cultural heritage currently monitored in any systematic way? If yes, how? (potential additional questions: Is monitoring formalized or project-based? Who collects and manages the data?)

3. What indicators or data are currently used to evaluate tourism pressure or impacts on these sites? (additional: Are these mostly quantitative or qualitative? Are there gaps in the existing indicators?)

4. In your opinion, which indicators are essential for monitoring negative tourism impacts on cultural heritage sites such as Plečnik's Ljubljana? (physical/environmental indicators, social/community indicators, visitor behavior indicators, economic/governance indicators, others (those not mentioned that the intervirewee might be aware of))

5. Are there any domain-specific indicators that you believe are specifically relevant for Ljubljana and Plečnik's heritage, but not commonly used elsewhere? (additional question: Has inscription in UNESCO (2021) created additional pressures?)

6. What negative impacts of tourism on Plečnik's Cultural Heritage sites have you observed or are concerned about? (Have these impacts changed since UNESCO

inscription in 2021? If yes, in what ways? Which Plečnik sites do you believe are most exposed to tourism pressure, and why?)

7. How well aynchronized are tourism, heritage protection, urban planning, and policy-making actors in Ljubljana? (additional: Could stakeholders' collaboration improve? Who is responsible for monitoring and actions?)

8. Are you familiar with tourism impact monitoring or management practices from other UNESCO World Heritage sites that can serve as good examples, if so, which ones? (additional: Are there some lessons on what Ljubljana should avoid?)

9. How can monitoring results be effectively translated into concrete management and policy actions? (additional: What are the most important conditions for the monitoring to be effective?)

10. What 3-5 the most important actions would you take in the next five years in order to ensure sustainable tourism development and protection of Plečnik's cultural heritage sites? (additional: What educational actions would you recommend for increasing visitors' awareness of the importamce of these CHSs?)