

Climate Governance in World Heritage Cities

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by

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Declaration

I hereby declare that the following masters thesis is written exclusively by me without any assistance by third parties. All of the information sources used in this thesis are indicated in the reference list and no further sources were used other than those indicated within the thesis itself.

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Berlin, February 2024

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Abstract

This study explores the interplay between the UNESCO status and climate governance in World Heritage cities. With climate change posing significant threats to living urban landscapes, local governments and public actors strive to implement sustainable and resilient strategies. However, complications arise when cities attain the World Heritage status, complicating climate governance practices. Qualitative research, involving interviews with key stakeholders from the Climate and Monument Protection Departments in Lübeck, Regensburg, and Bamberg, reveals a negative impact of cultural heritage on climate governance. The study contends that, when harnessed effectively, cultural heritage can contribute to the sustainability and resilience of cities in addressing climate change. It emphasises the necessity for flexibility, collaboration, and a human-centric approach, advocating for a common understanding and prioritisation of human life within climate governance. In conclusion, this research underscores the importance of viewing heritage as a dynamic component integrated into cities' climate governance strategies.

Keywords: Adaptation, Climate change, Climate governance, Climate policies, Cultural heritage, Management plans, Mitigation, Resilience, Sustainability, UNESCO, World Heritage cities.

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List of Abbreviations

ARCH	Advancing Resilience of Historic Areas Against Climate-Related and other Hazards
DDR	Disaster Risk Reduction
HUL	Historic Urban Landscape
ICLEI	International Council for Local Environmental Initiatives
ICOMOS	International Council on Monuments and Sites
NGOs	Non-Profit Organisations
OUV	Outstanding Universal Value
OWHC	Organisation of World Heritage Cities
ROCK	Regeneration and Optimisation of Cultural Heritage in Creative and Knowledge Cities
SDGs	Sustainable Development Goals
UN	United Nations
WW II	World War Two

1. Introduction

Climate change is one of the most pressing global challenges of our time, with significant and far-reaching impacts on urban areas. As cities face increasing climate-related threats, they must develop strategies for resilient and sustainable future environments. Concurrently, historic cities often have rich cultural heritage (tangible and intangible), including buildings, monuments, and traditions, which are of immense value to their identity and history.

This research aims to investigate the intersection of climate governance and cultural heritage, in World Heritage cities while considering the unique influence of the UNESCO World Heritage status. By exploring these conventions, the study seeks to reveal opportunities for cultural heritage to operate as a tool in enhancing the resilience and sustainability of urban living environments, in the context of UNESCO-designated cities through climate governance. The context of World Heritage mid-sized cities has an essential role in this research since its results can be applied in similar cities.

1.1 Research Question

How does the UNESCO World Heritage status in historic cities affect climate governance?

1.2 Objectives

- I. To explore the role of climate governance in shaping strategies in World Heritage cities.
- II. To assess the effectiveness of governance structures in influencing urban resilience, heritage preservation, and climate strategies.
- III. To compare and contrast climate governance and heritage preservation efforts in Lübeck, Regensburg, and Bamberg.
- IV. To investigate if cultural heritage has been integrated into climate governance and if not, what are the obstacles.

1.3 Aims

- V. Provide an in-depth understanding of how governance mechanisms influence climate strategies in the context of World Heritage cities.
- VI. Identify best practices and potential areas for improvement in climate governance structures to enhance urban resilience as well as to integrate heritage preservation into the equation.
- VII. Offer insights that can inform climate policymakers, urban planners, and heritage preservationists on strategies for resilient and sustainable urban development in World Heritage cities.

1.4 Methodology

- I. Interviews: Conduct interviews with climate representatives and local authorities in Lübeck, Regensburg, and Bamberg to gather insights on governance structures and climate policies, as well as heritage specialists, etc.
- II. Document Analysis: Examine governance mechanisms and policies (adaptation, resilience) influencing climate strategies and heritage preservation.
- III. Comparative analysis: The comparative analysis will serve as the core method for assessing the impact of climate change policies and strategies in World Heritage cities.

1.5 Significance of the Study

The study is essential as it can provide vital insights into the utilisation of cultural heritage resources in historic urban environments to address climate change issues, namely through climate governance. The objective of this project is to augment understanding of the benefits of incorporating cultural heritage into climate governance. It will do so by carefully examining the interaction between climate governance (mitigation, adaptation, resilience), sustainable urban development, and cultural heritage. Moreover, the significance of this work is heightened by the fact that it addresses a relatively unexplored subject, thereby highlighting the existing research gap.

The selection of Lübeck, Regensburg, and Bamberg as case studies was intentional, instead of choosing further World Heritage cities such as Stralsund Wismar, Golsar or Quedlinburg, for a specific rationale. The rationale behind this decision emerges from the fact that Lübeck, Regensburg, and Bamberg are a few instances of Germany's mediaeval historical cities that possess the dual status of being independent cities and UNESCO World Heritage sites, owing to their profound historical importance.

1.6 Research Gap

The aforementioned research gap identified in this context is threefold:

A Lack of Comprehensive Integration: Existing research often examines climate change adaptation, cultural heritage preservation, e.g. “Cultural Heritage Preservation: The Past, the Present and the Future (Nilson and Thorell, 2018)”, and sustainable urban development, e.g. “Sustainable Urban Design: An Environmental Approach (Biddulph, 2010)”, separately. This fragmented approach limits our understanding of the potential synergies and trade-offs between these fields.

Limited Focus on UNESCO Sites: While some studies have explored the impact of climate change on cultural heritage, e.g. “The Future of Heritage as Climates Change: Loss, Adaptation and Creativity, (Harvey and Perry, 2015)”, and “Climate Change and Cultural Heritage: A Race Against Time (Smith, 2015)”, there is a paucity of research specifically examining the unique challenges and opportunities faced by UNESCO World Heritage sites in balancing climate governance and heritage preservation.

The Need for Culturally Appropriate Approaches: There is a growing recognition of the importance of culturally appropriate methodologies for assessing the effects of climate policies on cultural heritage, values, and practices. Such approaches can provide deeper insights into the diverse cultural contexts in which urban heritage is embedded. Simultaneously, these approaches can be also adapted to similar cases and solve long-term issues that cities have been facing for a while.

1.7 Structure of the Thesis

The thesis is developed to thoroughly include the topics and goals of the research. The information is organised into six main sections, with each chapter being focused on a certain field of study. The following chapters include an overview of the current literature, which may be regarded as problematic based on early observations. There is a deficiency of scholarly literature on the topic of climate governance and cultural heritage. To ensure the coherence of my study, I had to modify the extensive literature available on each specific issue, while still including a thorough academic foundation. Thus, by establishing a link between the restricted literature on climate governance and cultural heritage, and the unrestricted literature on climate change, policies, and cultural heritage in isolation, I have furnished the readers with a thorough reference to my study issue. In addition, I clarify the research methodology and examine the case studies of Lübeck, Regensburg, and Bamberg. I analyse their heritage management plans, climate policies, and my qualitative research findings. I present the findings and offer recommendations. Finally, I emphasise the importance of this research in the context of urban policymaking and heritage preservation.

My goal is to offer a detailed plan for establishing urban environments that are both resilient and sustainable, while also preserving cultural heritage and finding ways to integrate it into climate governance practices. I tend to explore the complex connections between climate change, sustainable urban development, and cultural heritage preservation.

2. Literature Review

As previously stated, the literature review on the subject of climate governance and cultural heritage presents certain difficulties. Aside from a limited number of scholarly publications on the subject (Fatorić and Egberts, 2020; Kern et al., 2021; Fatorić and Daly, 2023), I have not found any well-established and foundational literature that expressly addresses climate governance and the incorporation of cultural heritage within it. Considering the focus of my study on climate governance in World Heritage cities, an area that has not received extensive research attention, I have conducted a comprehensive review of the available literature. This review includes an examination of the relevant literature background, which concerns the topics of cultural heritage climate change, sustainability, and resilience in isolation. There is a comprehensive intellectual foundation on climate matters, including climate policies and the crossing of heritage with climate change and its threats. By carefully selecting essential sections from existing literature, I have successfully merged a strong and well-organised theoretical foundation. This foundation can support my research and potentially serve as a valuable academic resource for future studies on climate governance and the integration of cultural heritage within it.

2.1 Interplay of Heritage, Climate Governance, and Politics in World Heritage Cities

In today's world, cultural heritage encompasses more than mere immobile structures or objects; it represents a lifestyle that is closely interwoven with human civilisation and therefore it inherently contains political characteristics. The concept of heritage has been subjected to rigorous scrutiny and analysis over time as scholars have engaged in discussions over its nature and meanings (Smith, 2006; Harrison, 2010; Lekakis, 2020). Therefore, it is imperative to examine the underlying factors that elevate heritage to a level well above the physical realm.

The concept of cultural heritage has originated inside nation-states, where it was initially utilised as a communal asset to recount the past achievements of forebears for the advantage of future generations. That is to say, there is a particular feeling within the context of cultural heritage where the present is obliged to its past and its inheritance. Therefore, the present has to pass this inheritance (monuments, traditions, etc.) to future generations (Smith, 2006; Harrison, 2010; Lekakis, 2020). Out of these factors, governance plays a vital role in the fundamental nature and ongoing preservation of heritage; therefore I mentioned prior the political content of heritage. Each

city, its administration, public as well as private organisations, and local stakeholders play integral roles in preserving heritage and often have a significant influence on the management of properties in living urban environments, including World Heritage sites, a fact that also concerns climate governance and the integration cultural heritage (Ferreira et al., 2023).

Before examining the correlation between urban settings, cultural heritage, and climate governance it is essential to deconstruct the notion of cultural heritage. According to Paris (2009), cultural heritage encompasses a wide array of aspects, including artefacts, monuments, collections of buildings, sites, museums, and their many qualities, which might be historical, artistic, aesthetic, scientific, anthropological, symbolic, or social. Cultural heritage encompasses both tangible manifestations (such as undersea, immovable, and mobile objects) and intangible manifestations that are interwoven into natural and cultural heritage sites, monuments, and artefacts; but of course, heritage as I already mentioned is something more than just static objects.

World Heritage sites and especially cities which I am examining in this research, are prone to several challenges, including tourism, human activities, urban growth pressures, and notably, the impacts of climate change. Simultaneously, heritage city centres generally exhibit densely clustered structures, where every corner is occupied by conserved landmarks and buildings. Nevertheless, the compact arrangement frequently restricts opportunities for rejuvenation and originality, so jeopardising the potential for these regions to remain dynamic and culturally diverse; a fact that affects climate governance as well (Smith, 2015; De Waal et al., 2022).

These challenges pose a threat to the general security, truthfulness, and legitimacy of these sites. Hence, a discerning perspective regards government as a way to address these issues. Managing World Heritage cities in urban landscapes, such as the old town of Bamberg, presents several challenges. Governance is increasingly gaining attention, as shown by several studies (Labadi and Logan, 2016; Eckersley, 2018; Tomor, 2019; Maxwell, 2022; Nijman et al., 2022). However, it is increasingly evident that the organisational and administrative frameworks of institutions and governments are confronted with challenges originating from both within and without, giving rise to inquiries over their effectiveness.

According to academic discourses, experts such as Ferreira et al. (2023) propose six main areas for enhancing the governance structures and management systems of World Heritage sites:

- I. Institutional integration and policy coordination.
- II. Engagement with stakeholders and local communities.
- III. Consensus-building and conflict resolution mechanisms.
- IV. Knowledge sharing and dissemination.
- V. Monitoring, evaluation, and impact assessment.
- VI. Development of resilience and sustainable models to address significant changes.

The areas above are essential for the process of integrating cultural heritage into climate governance; a fact that I demonstrate through my findings and solutions.

The administration and maintenance procedures of World Heritage sites are shaped by an intricate system of institutions, goals, and operational approaches, which ultimately determine their character and influence. The effectiveness of this management system will be determined by the interaction between diverse domains and governance levels. The effectiveness of these efforts greatly depends on how each stakeholder group takes on certain tasks and duties, which is crucial for achieving a complete, coherent, and well-coordinated approach (Smith, 2015; Ferreira et al., 2023; Nijman et al., 2023).

The bedrock of these management systems comprises institutional frameworks including many entities. They promote communication among many stakeholders and across various hierarchies. Institutions that have more management duties must possess the ability to adjust and modify their operations. Working closely with diverse companies associated with a certain place becomes more convenient, enabling the integration of innovative and emerging ideas. These initiatives also require sufficient human, financial, and intellectual resources (Eckersley, 2018; Ferreira et al., 2023).

Ferreira et al. (2023) state that effective governance involves various crucial elements, such as promoting community well-being, ensuring the long-term sustainable conservation of World Heritage sites, and successfully executing management plans. The active participation of local community members and stakeholders is closely interconnected with these factors. The notion of “effective governance” is particularly relevant in the realm of urban governance, where carefully designed and refined policies drive cities towards sustainable and resilient trajectories. Effective governance in UNESCO-designated cities relies on the integration of cultural heritage into broad legislative frameworks, including climate policies, to promote resilient and sustainable futures.

Local communities, consisting of citizens, employees, and frequent users, together with stakeholders such as owners, developers, and other rights-holders, have a vital role in safeguarding, promoting, and ensuring the future of World Heritage sites. These stakeholders and communities bear a dual obligation to safeguard World Heritage sites and be the primary responders to any issues they experience. Their actions encompass engaging with the physical environment, replicating its unique character, and safeguarding the associated culture and values (Smith, 2015; Ripp and Rodwell, 2017).

The intricate organisational frameworks responsible for overseeing World Heritage sites sometimes have overlapping responsibilities, leading to potential misunderstandings and disputes in the administration of these sites, including their perceived value. The administration of World Heritage sites can give rise to various conflicts, which are indicative of the intricate nature of the institutions and stakeholders involved (Maxwell, 2022; Ferreira et al., 2023). Conflicts arising from the interplay between different levels of governance, conflicting stakeholder interests, and the recognition of local communities and stakeholders need specific consideration, a fact that can be confirmed further in this research through the methodology.

It is important to actively establish conflict resolution and consensus-building procedures, which should be included in management strategies, to mitigate these challenges. These mechanisms encompass mediation and preventative measures, which depend on effective communication, the sharing of information, and the implementation of strategies, rewards, or compensating measures that promote involvement. Ferreira et al. (2023) argue that it is crucial to use a proactive strategy in order to maintain harmonious management practices and effectively address future disputes.

In a heterogeneous environment with several stakeholders with diverse interests, perspectives, and attitudes, it is imperative to establish connections and construct bridges. To achieve an optimum management system, it is crucial to develop clear and continuous lines of communication across different organisations. This involves enhancing responsibility and openness both inside and across institutions, as well as fostering the exchange of networks and platforms. Transparency is essential for understanding the dynamics of the interactions between these institutions and their internal operations. Enhancing communication and openness can lead to a more effective and cohesive management structure (Ripp and Rodwell, 2017; Eckersley, 2018).

Effective monitoring and evaluation mechanisms are crucial for the successful application of planning tools and policies within World Heritage sites. These systems are crucial for ensuring that management practices adhere to current legislation and meet the criteria for external reporting. It is advisable to synchronise monitoring and evaluation activities with impact assessment studies conducted before and after a site is designated as a UNESCO site. Impact evaluations are crucial components of heritage management systems, particularly in evaluating their potential effects on the site's Outstanding Universal Value (OUV). Therefore, it is necessary for projects, programmes, and policies concerning World Heritage sites to demonstrate their proactive impact on the OUV. This necessitates the identification, assessment, and mitigation of any potential adverse impacts on the environment and society (Eckersley, 2018; Ferguson, 2018; Ferreira et al., 2023).

Systems responsible for the management of heritage sites should be well aware of the evolving objectives within the World Heritage framework. To address new strategic problems, it is imperative for them to promptly modify their management and climate strategies. In this case, strategies and policies function as ways to protect cultural heritage but also as innovative methods to implement climate projects towards sustainable futures. Plans aimed at safeguarding the value of World Heritage sites must have comprehensive systems, equipment, instruments, and detailed regulations that effectively combine sustainability objectives and efforts. This should also apply to goals that have several levels, with a specific emphasis on matters related to climate change and other abrupt alterations. To ensure effective management response at both the site-specific and national levels, it is essential to submit regular reports. The adaptability and administration of governance systems, ensure the enduring existence and sustainability of World Heritage sites in the presence of contemporary challenges (Ripp and Rodwell, 2017; Ferreira et al., 2023).

In addition to examining governance techniques within urban settings, this research especially investigates climate governance and its impact on World Heritage cities. Hence, it is highly important to undertake a study on the interrelation between climate change, cultural heritage, and in general climate governance. The main aim of this study is to investigate the climate governance systems utilised in World Heritage cities in the context of climate change. Curiously, cities designated as World Heritage sites frequently lag in adopting sophisticated strategies to mitigate and adapt to the impacts of climate change. This circumstance casts uncertainty on the impact of the UNESCO designation on climate policies and governance.

These recognised World Heritage cities are sometimes referred to as historic cities (Rodwell, 2006; Harrison, Dias, and Kristiansen, 2023). The problematic narrative begins right from the outset inside the “historical” framework. These cities face limited possibilities for altering their terrain in response to climate-related hazards. This is a significant problem in the case studies that I will analyse later. The primary issue, as previously noted about old cities, is the lack of significant alterations. Examples include the enforcement of energy-saving strategies and the alteration of public city squares, both of which are governed by stringent regulations. These significant challenges may hinder the implementation of sustainable design principles in urban environments (Haupt et al., 2022).

In general, cities are essential organised systems with both advantageous and harmful consequences. Urban environments contribute significantly more to greenhouse gas emissions compared to rural surroundings. Additionally, their organised structure renders them particularly susceptible to the impacts of climate change. Consequently, cities must adopt climate policies (Haupt, Kern and Irmisch, 2022). At the same time, cities that have been designated as UNESCO sites can effectively tackle the challenges posed by climate change, through efficient climate governance.

Climate governance significantly influences urban politics and policies, hence impacting cities (Eckersley, 2018; Kern et al., 2021). Heritage cities, especially those included in the World Heritage list, are characterised by their unique qualities and vulnerability to evolving policies, which makes them vibrant and intricate urban living environments. World Heritage cities face a range of challenges, including climate change, urban pressures, over-tourism, and historic conservation. These circumstances need the development of well-crafted climate policies within the climate governance context (Eckersley, 2018; De Waal et al., 2022). Kern et al. (2021) have revealed a substantial lack of knowledge surrounding governance in World Heritage cities. The primary cause for worry arises when this type of influence negatively impacts the protection and preservation of cultural heritage. Thus, a more solid and specific theoretical framework for this study is required. Furthermore, via an analysis of the theoretical framework discussed climate governance in World Heritage cities with comparable attributes and shared challenges, it is possible to improve the urban environments of these cities and promote them as models for learning and exchanging information to address their respective concerns (Haupt et al., 2019).

Typically, the focus lies on exclusive administrative strategies tailored to individual cities, buffer areas, and conservation methods. However, for certain occasions, these characteristics alone are inadequate. Specifically, a more thorough analysis of World Heritage cities management plans reveals a significant discrepancy (in that case the 3 distinguished cities). The lack of discourse about climate change and its associated measures effectively downplays the significance of climatic factors. This is a matter of concern, as it relates to achieving sustainability, resilience, and the preservation of cultural heritage.

Given this perspective, it is evident that politics and heritage are inherently interconnected. In contemporary times, cultural heritage is emphasised from a predominantly political perspective rather than focusing on historical and traditional frameworks (De Waal et al., 2022). Moreover, according to Harvey and Perry (2015), the connection between heritage and climate change inevitably brings us into the realm of politics; a fact that reconfirms my initial references to the political content of heritage. It is also important to stress that climate change and heritage, although mostly addressed at the local level, have significant ramifications for international policies.

According to Harvey (2014), it is recommended to embrace a broader and future-oriented approach when dealing with practices concerning heritage and climate change. The importance of this approach cannot be overstated in order to discover more pragmatic resolutions for climate governance in World Heritage cities. Stahl and Cimorelli (2005) argue that without innovations, unproductive practices are unlikely to lead to considerable progress.

World Heritage cities require comprehensive, cross-sectoral management plans, strategies, and activities to address the multitude of issues they encounter. This research specifically examines the integration of climate governance and cultural heritage. Thus, it is crucial to acknowledge that cities with a historical legacy of cultural heritage may play a significant role in addressing climate change (Kern et al., 2021). Simultaneously, it has been extensively acknowledged that cities, regardless of their UNESCO designation, play a crucial role in climate governance (Haupt et al., 2019; Ferreira et al., 2023).

To effectively tackle these issues, it is necessary to enhance one's flexibility and have a comprehensive understanding of several subjects, such as cultural heritage and governance, especially since the existence of an established theoretical framework regarding this topic is vague.

This flexibility is crucial for the success of governance projects in World Heritage cities. In the forthcoming chapter, my inquiry expands to include the impact of urbanisation on climate change. This will provide a foundation for a more thorough analysis of my initial research topic.

2.2 Navigating Climate Challenges in Living Urban Environments

Undoubtedly, the contemporary world is undergoing rapid transformations, as indicated by the perpetual evolution of habits and everyday conventions. Urbanisation is a prominent illustration of this alteration since it exerts a substantial influence on historic cities and their adjacent ecosystems. Urbanisation is characterised by a significant demographic change when a substantial proportion of the population moves from rural to urban regions (Aktas, 2021). The migration is mostly motivated by the abundance of possibilities and financial incentives available in metropolitan regions. As this research advances, I will provide more comprehensive information on the impacts of climate change, as they have a substantial influence on urbanisation.

We are currently seeing an era dominated by urbanisation since the continuous increase in population and urbanisation patterns are exerting considerable pressure on the cities of the future. According to the United Nations (UN), more than half of the global population lives in urban environments. The urban population will continue to grow in all areas. Based on forecasts, this number is expected to increase to around 68% by 2050. This also affects historic cities. The exponential expansion of cities is becoming more closely associated with the occurrence of urban sprawl, a consequence of the scale of urban development. Metropolises and intermediate cities are experiencing unprecedented growth rates, which further solidifies their importance within the broader context of worldwide development (World Urbanization Prospects, 2014; UNESCO 2016; Aktas, 2021).

Cities exert a powerful allure due to their status as centres of cultural wealth. They provide entry into sophisticated social, medical, and educational systems while fostering economic expansion, ingenuity, and inventiveness. Conversely, the urbanisation process has led to a substantial rise in the population of impoverished individuals and the proliferation of informal settlements. Currently, about one billion individuals reside in slums characterised by inadequate infrastructure, limited availability of critical services, and absence of legal property rights (Bandarin and Van Oers, 2014; De Waal et al., 2022). Projections indicate that without intervention, the global slum population might potentially exceed 3 billion by 2050, as reported by the UN (2013).

Urbanisation unquestionably yields several advantages, such as fostering economic expansion. However, it also entails a plethora of disadvantages, some of which have previously been

addressed. These challenges encompass issues related to gentrification, social inequity, urban expansion, and environmental impacts. Therefore, it is reasonable to propose that urbanisation has the capacity to greatly impact political and socio-economic frameworks (Bandarin and Van Oers, 2014; De Wall et al., 2022).

The remarkably high rate of urbanisation has substantial impacts on environmental sustainability. Complex urban landscapes encounter significant difficulties as a result of the rapid and intense climatic and environmental changes that are happening concurrently. Several coastal cities, situated at an elevation of less than 10 metres above sea level, are already inhabited by millions of people. The current trend of increased urbanisation will ultimately lead to the growth of megacities located along the shore. Today, 75% of global energy consumption occurs in urban landscapes. Certain regions may soon face a pressing issue of water shortage (Bandarin and Van Oers, 2014; UNESCO, 2016).

The susceptibility of cities has been underscored by natural threats, such as hurricanes, earthquakes, and floods. The occurrence of geophysical hazards depends on several factors such as a city's economics, population, governance, geographical position, and infrastructure quality. Cities have used culturally-oriented approaches to enhance their resilience. These techniques encompass fortifying the structural resilience of cultural sites to withstand the impacts of climate change in the future, as well as establishing heritage and arts initiatives to aid in the recovery and revitalisation after a disaster. Revitalising green spaces inside and outside urban areas may serve as a resilience buffer, offering individuals a multitude of health and environmental benefits, as well as providing spaces for entertainment, relaxation, and, in some instances, food cultivation. “Green” transport efforts also aid in decreasing cities' carbon footprints (UNESCO, 2016).

An aforementioned difficulty is the inherent correlation between urbanisation and climate change. Undoubtedly, climate change presents a significant and enduring threat to urban landscapes, imperilling several historic cities (Bandarin and Van Oers, 2014; Directorate-General for Education, Youth, Sport and Culture (European Commission), 2022). The risk presented by climate change, characterised by the occurrence of natural catastrophes, has quadrupled in the last four decades, leading to significant human casualties and economic damages (Smith, 2015; Marais and Zodrow, 2013). The latter also concerns my case studies.

The recent summer wildfires in Athens and the severe flooding in other major cities like Hamburg provide compelling illustrations of the environmental challenges that urban areas are presently confronting. The many processes of urbanisation are inherently interconnected with the tensions arising from the interaction between urban areas and their changing climates (O'Brien and Leichenko, 2008; Directorate-General for Education, Youth, Sport and Culture (European Commission), 2022).

It is prudent to acknowledge the substantial disparities between rural and urban regions since they encounter distinct challenges. Urban environments differ significantly from rural landscapes due to the extensive influence of the urbanisation process, which leads to alterations in social, cultural, and political standards. Moreover, urban settings exhibit distinct physical attributes such as dynamic shifts in population, diverse land use and vegetation patterns, complicated architectural structures, historical edifices, and the presence of heritage cities (Wamsler, Brink and Rivera, 2013; Bandarin and Van Oers, 2014; LeGates & Stout, 2015; Smith, 2015).

According to Wamsler, Brink and Rivera (2013), urban landscapes, including historic cities, possess a range of distinctive features that set them apart from other types of landscapes, like rural:

- Density of Population: A greater density of people per unit of space characterises urban areas.
- Built-Up Surface Area: In urban environments, the amount of land occupied by structures and infrastructure is significantly larger.
- Consumption of Land: Greater rates of land use for a variety of purposes are typically found in urban environments.
- Building Heights: Taller buildings are a common feature of urban landscapes, reflecting vertical expansion.
- Concentration of Political and Economic Centres: Political, economic, and administrative activity centres are found in urban areas.
- Infrastructure Density and Connectivity: Urbanisation is characterised by the existence of vast infrastructure networks and connectivity.

Consequently, the risks posed by climate change to urban environments differ from those faced by rural regions, either in kind or intensity. Some of the following challenges that also fit my case studies have been identified by Wamsler, Brink and Rivera (2013), as being distinct:

- Heavy Rainfall: Because of their built-up surfaces, modified drainage patterns, and decreased natural absorption, urban areas may be more vulnerable to flooding (e.g. Lübeck).
- Local Wind Patterns and Turbulence: The urban environment can create local wind patterns and turbulence, which can affect temperature and air quality (e.g. Regensburg).
- Temperature: Because of the built environment and lack of green spaces in cities, urban heat islands, which are characterised by elevated temperatures, are more noticeable there (e.g. Lübeck, Regensburg, and Bamberg).
- Emissions: Pollutant and emission levels are higher in urban areas, which aggravates air quality problems and raises concentrations of greenhouse gases.
- Dust Particles: Higher levels of airborne dust particles can be caused by increased construction and vehicle activity in urban areas.
- Amount of Waste: Cities with denser populations face more obstacles in managing and producing waste.
- Water Waste: Water supply and drainage systems may be impacted by the varying patterns of water consumption and waste found in urban areas.
- Noise: The combination of industry, human activity, and transportation often results in an environment with high noise levels.

Urban landscapes, characterised by distinct characteristics and high human activity, encounter a distinct array of dangers and problems associated with climate change as compared to rural settings. It is important to emphasise that the urban climate consists of components such as wind, fluctuations in temperature, humidity, solar radiation, and the characteristic of being cloudier and less humid compared to other climates (Emmanuel, 2005; Directorate-General for Education, Youth, Sport and Culture (European Commission), 2022).

To effectively tackle the urgent challenges of climate change and promote sustainable development and resilient urban landscapes, municipal administrations must implement adaptation, mitigation, and climate policies; in some cases though, especially when cities have established UNESCO status that seems impossible. Resilient urban landscapes have the capacity to rebound and recuperate from many perils, including fires and dangers, while also demonstrating the ability to endure them. It is important to acknowledge that while urban settings may not be entirely immune, being resilient means that they are committed to strengthening the well-being of individuals, communities, and

institutions (Directorate-General for Education, Youth, Sport and Culture (European Commission), 2022). According to the study conducted by Wamsler, Brink and Rivera (2013), it is imperative to incorporate measures for adjusting to climate change in different cities and across diverse industries. This encompasses the sustainable administration of resources, the strategic organisation of cities, and, of utmost significance, the responsible guardianship of cultural heritage in all its manifestations, encompassing the safeguarding, protection, and related undertakings.

In conclusion, this chapter has provided the necessary foundation for a comprehensive examination of the interrelationships between cultural heritage, living urban landscapes, and the vulnerabilities linked to climate change and urbanisation. To go more into the specific challenges, strategies, and potential solutions that lie ahead, I may provide a concise overview of the key concepts and underscore their significance. The subsequent chapters will conduct a comprehensive analysis of these interrelated elements, aiding us in cultivating a more organised comprehension of how cultural heritage may function in a manner that is both robust and susceptible to climate change and urban settings.

2.3 Preserving the Past, Navigating the Future: Climate Change Challenges in Urban Cities

The intensity of the challenges that climate change presents to cultural heritage is growing. This chapter focuses on analysing the risks posed to urban environments and explores the impact of climate change on cultural heritage across time. The discussion has just started to tackle the enormity of the risks presented by climate change and its significant impact on urban settings and the well-being of their inhabitants. It is essential to acknowledge that cultural heritage, a vital component of the Historic Urban Landscape (HUL) or historic city contexts, is equally susceptible to the adverse impacts of climate change challenges.

Climate change has a substantial influence on the subject of heritage studies. This global phenomenon presents a risk to many geographical areas, cultural objects, and ways of life, necessitating the implementation of different strategies for managing and adapting to climate change. The link between heritage and climate change is reciprocal, with heritage playing a crucial role in our understanding of the mechanisms behind climate change (Harvey and Perry, 2015; Smith, 2015; Cave, 2022; Daly, 2022).

The comprehension of climate change and its impacts is significantly shaped by deeply rooted historical perspectives. Furthermore, a strong feeling of obligation towards heritage is crucial in effectively managing the dynamic climate and fostering public engagement in addressing it. To secure the well-being of future generations, it is a duty to safeguard the connections between the past, present, and future (Smith, 2006; Harvey and Perry, 2015; Markham et al., 2016; Lekakis, 2020; Cave, 2022).

In recent years, there has been a notable surge in the level of interest that scholars, executives, legislators, and the public have devoted to the examination of both climate change and heritage. Despite the focus on this matter, the intricate, ever-changing, and crucial connections between climate change and heritage have not been given much consideration in comparison. The objective of this work is to investigate the unknown aspects and ascertain the deeper connections between these two fields (Harvey and Perry, 2015; Smith, 2015; Markham et al., 2016; Cave, 2022; Daly, 2022).

Comprehending the intricate relationship between cultural heritage and the impacts of climate change on resilient urban landscapes is essential for this academic study as it serves as the foundation for subsequent debates, especially within the climate governance context. Hence, it is important to elucidate that, according to the viewpoint of this research, heritage has a broader scope beyond physical entities such as buildings, monuments, sculptures, and artefacts.

Exploring the connection between heritage and climate change, particularly in the context of constructing resilient historic cities, necessitates a reevaluation of our understanding of heritage. The extent to which climate change affects cultural heritage may be constrained if we confine our comprehension of it just to its tangible expressions. As an illustration, structures may retain their structural integrity. However, while considering the topic from a broader perspective, it is more suitable to perceive cultural heritage as a dynamic and intricate system. It encompasses both physical objects and the individuals that utilise them, as well as the motivations behind their usage and the fundamental principles they represent. Due to the inherent complexity and intricacy of heritage, any alterations can significantly influence it. Therefore, it is vital to possess a comprehensive comprehension of the constituents of cultural heritage prior to providing a conclusive reaction to the perils presented by climate change. Our appraisal and subsequent actions are shaped by the perspective we choose, whether it is based on traditional criteria that emphasise physical structures (Harvey and Perry, 2015; Smith, 2015; Markham et al., 2016).

The concept of heritage encompasses many historical, social, and cultural elements, extending beyond traditional boundaries, as I have already noted. It extends beyond physical objects to encompass narratives, traditions, ceremonies, and intangible aspects that contribute to the shaping of our societies and individualities. Embracing this broader perspective allows for a more comprehensive understanding of the intricacy and abundance inherent in cultural heritage. The primary emphasis is on historic landscapes that encompass human components and experiences, particularly those that are useful.

Urban regions are undeniably significant human settlements, as previously elucidated. The influence of humanity on these vast metropolitan regions and major city cores is substantial. Cities serve as living archives, documenting the intricate interplay between numerous elements that define their intricate connection with individuals. This intricate link spans several sectors, encompassing economies, customs, knowledge, and technology. Cities serve as the focal point of communal

memory, as stated by Rossi et al. (1982). Culture is closely intertwined with the collective memory of urban environments, serving as a vibrant source for engagement, challenges, innovation, and eventually, evolution. Thus, cultural heritage demonstrates a vital role in the concept of “living urban landscapes,” and more specifically “historic cities” (UNESCO World Heritage Centre, no date c; UNESCO, 2016; De Waal et al., 2022).

According to Anastácio, Azeiteiro, and Pereira (2017), heritage encompasses both tangible and intangible aspects that have a role in fostering diversity, social cohesion, creativity, and urban revitalisation, a fact that reconfirms the latter view regarding the notion of heritage. The definitions of heritage above reconfirm the initial statements regarding the nature of heritage, which is essential for the foundation of a solid theoretical background concerning cultural heritage and climate governance in historic cities and this is because the concept of heritage is broadening from time to time. To improve the quality of life in historic cities, it is necessary to protect and maintain the cultural and historical aspects of their landscapes. In a rapidly evolving world, fostering social cohesion and economic success is crucial. The preservation and honouring of historic and modern cities may be achieved more effectively via active collaboration across the public, corporate, and civic sectors (UNESCO, 2013; De Waal et al., 2022). To have a more thorough understanding of how heritage may be a valuable asset for cities, it is necessary to briefly analyse the HUL.

The suggestion about the HUL was officially suggested by the UNESCO General Conference on the 10th of November, 2011. This approach to the HUL emphasises the whole human context, encompassing both tangible and intangible components, rather than only focusing on the conservation of physical structures. The objective is to enhance the sustainability of planning interventions by considering a series of factors, including the existing built environment, intangible heritage, cultural diversity, socioeconomic aspects, environmental concerns, and the values cherished by local communities (UNESCO, 2013; Bandarin and Van Oers, 2014; De Waal et al., 2022).

As a technique, it emphasises the need to recognise creativity and cultural diversity as crucial assets for promoting social, cultural, and economic progress. It offers an alternative perspective to the conventional method of categorising cities into separate conservation areas, which might inadvertently isolate efforts to preserve historical sites and lead to the creation of a preservation “focus”. In order to accomplish these objectives, UNESCO collaborates with cities to guarantee that

environmental, social, and cultural aspects are effectively integrated into management plans and urban development initiatives (UNESCO, 2013; Bandarin and Van Oers, 2014; De Waal et al., 2022).

This method has shown highly promising and favourable outcomes in several places. It involves achieving a delicate equilibrium tailored to each unique local setting, by integrating the safeguarding and conservation of urban history with the promotion of economic development, the improvement of general urban quality of life, and the optimisation of urban efficiency. Therefore, it enables the effective fulfilment of the needs of the present population while simultaneously ensuring the long-term preservation of a city's resources, safeguarding them for future use (Bandarin Van Oers, 2012; UNESCO, 2013; Bandarin and Van Oers, 2014).

It is crucial to comprehend that these many viewpoints - heritage, economic, environmental, and sociocultural - are interdependent and mutually beneficial rather than fundamentally conflicting. The viability of these solutions relies on their level of synergy and interdependence (Bandarin Van Oers, 2012; Bandarin and Van Oers, 2014; De Waal, 2022).

The World Heritage list comprises almost 250 historic cities, each of which bestows substantial socioeconomic advantages at both local and national scales. These benefits extend beyond the realms of tourism and the accompanying goods and services (UNESCO, 2013). Several initiatives have been initiated to showcase the potential benefits of integrating historical cities into contemporary urban settings. An illustrious example of this is the Regeneration and Optimisation of Cultural Heritage in Creative and Knowledge Cities (ROCK) initiative, which highlights old city cores as extraordinary sites for experimentation. This initiative exemplifies how cultural heritage may serve as a distinctive and influential driver for sustainable development, urban renewal, and overall economic prosperity in a community.

Urban heritage plays a crucial role in today's society by greatly influencing the development of city identities and acting as a driving force for social and economic advancement. The present-day society still has a considerable gap to bridge in order to properly grasp the importance of preserving old urban neighbourhoods. These regions not only function as valuable resources but also constitute the fundamental core of metropolitan towns' identity. Historically, several countries have not fully embraced the notion of historic cities and landscapes as valued heritage assets and this is because

traditionally, heritage was usually perceived as limited to historical monuments that represent a city's cultural achievements (Bandarin and Van Oers, 2012; UNESCO, 2013; Bandarin and Van Oers, 2014; UNESCO, 2016; De Waal, 2022).

However, since the 1960s, there has been a gradual shift in the general perception and societal standards, leading to a transformation of this widely accepted belief. Significantly, cities with historical significance currently constitute almost one-third of all the assets included in the World Heritage list, making them the most extensive category. Urban history was initially incorporated into collaborative conservation initiatives in Europe but has since been disseminated globally and gained widespread recognition (UNESCO, 2016).

Climate change plays a vital part in this context. Thus, since the beginning of this research climate governance has been mentioned so many times and is the main focus of my investigation. The HUL that concerns World Heritage cities (therefore my case studies) fits this context; therefore, I have to analyse the climate change context as well.

Currently, it is evident that climate change poses a long-term and extensive danger to both urban and rural regions, necessitating a prompt and resolute reaction. The HUL holds great significance due to their prestigious classifications and its role as a primary source of capital and cultural identity. However, the peril of climate change extends beyond just physical damage. It can cause a substantial change in the demographic makeup of these ageing cities. In other words, the imminent threat to this cultural heritage might potentially initiate alterations that would reshape the local population and disrupt established socioeconomic patterns (Quesada-Ganuza et al., 2021; De Waal, 2022; Harrison, Dias and Kristiansen, 2023).

The revered metropolitan areas with rich historical significance, which have been officially recognised as UNESCO World Heritage sites, encounter substantial challenges and susceptibilities due to the compounded impacts of climate change. These cherished spots for example may be affected by the heat island phenomenon, (which is also part of my findings), and is defined by higher temperatures in metropolitan areas. Generally speaking, it is projected that the temperature will rise by 0.3 to 0.7 degrees Celsius by 2035 and by a significant 2 degrees in the future. Hence, global warming persists in its inexorable progression and continues to affect cities, regardless of recent breakthroughs (Quesada-Ganuza et al., 2021). Moreover, elevated levels of humidity are

linked to a phenomenon called metropolitan Moisture/Dry Island, which can have adverse effects on historic structures and landmarks, accelerating the decay of tangible cultural heritage in historic metropolitan locations (Aktas, 2021), challenges that also affect my case studies. Transformative urban dynamics result in considerable changes to the urban landscape, including alterations in temperature patterns, increased humidity, more frequent dry summers, and a higher occurrence of heavy rains (Aktas, 2021; Fouseki, Guttormsen and Swensen, 2020).

The significance of disseminating information about the conservation and transmission of cultural heritage to future generations cannot be exaggerated. Over the next few years, this initiative will serve as a catalyst to foster resilience and facilitate sustainable growth. Hence, there is an urgent requirement for a comprehensive examination of the enduring consequences of climate change, particularly in urban cities (Brimblecombe, 2011; Duan, 2019; Fouseki, Guttormsen and Swensen, 2020; Quesada-Ganuza et al., 2021).

During the 29th session in 2005, the Committee officially recognised climate change as a growing danger to the preservation of a surging amount of cultural and natural monuments. The committee is presently amending its policy paper concerning the impacts of climate change on assets recognised as World Heritage sites. This update underscores the significance of climate change by seeing it as a multifaceted element that impacts both the natural and cultural heritage. According to the Intergovernmental Panel on Climate Change, climate change will cause distraction to heritage. The consequences encompass the physical harm to the buildings of cultural places, and the erosion of traditional practices (Duan, 2019; Quesada-Ganuza et al., 2021).

The significance of protecting cultural heritage during climate-related catastrophes is emphasised by the Sendai framework's incorporation of “Direct economic loss to cultural heritage damaged or destroyed attributed to disasters” as an indicator to evaluate worldwide advancement in its execution. Heritage significantly contributes to the cultural capital of local and national populations when assessing the dangers posed by climate change and climate-related calamities. Establishing a durable connection between individuals and their environment is crucial for cultivating a sense of place and belonging (Quesada-Ganuza et al., 2021).

Therefore, cultural heritage emerges as a crucial asset in attaining sustainable development. This perspective aligns with the Sustainable Development Goals (SDGs) outlined in the 2030 Agenda.

Significantly, Goal 13 of the SDGs requires immediate measures to address climate change and its consequences, while Target 11.4 emphasises the necessity to enhance endeavours to preserve and defend the global cultural and natural heritage. The overarching objectives of resilient development, climate change mitigation, and cultural heritage acknowledgement and preservation are interconnected (Petti, Trillo and Makore, 2020; Quesada-Ganuza et al., 2021; De Waal, 2022).

This chapter has conducted a comprehensive examination of the risks presented by climate change to cultural heritage in urban environments, emphasising the imperative of implementing proactive measures to safeguard these precious assets. Over time, it becomes evident that the preservation of cultural heritage and the mitigation of climate change are not conflicting objectives but rather necessitate cooperation. The forthcoming chapter will delve into the intricate interconnections between cultural heritage and sustainability.

2.4 Sustainable Development and Cultural Heritage: A Climate Governance Approach

Sustainable development offers a way to protect cultural heritage and mitigate the risks posed by climate change (Labadi and Logan, 2016; Labadi, 2022); at the same time through the proper integration of cultural heritage into climate policies sustainability can be efficiently achieved. This chapter centres on the concept of sustainability and its strong connection to cultural heritage. The necessity of achieving a harmonious equilibrium between future requirements and the conservation methods of the past may be exemplified by examining how cultural heritage can be leveraged to drive sustainable development.

Recently, sustainability has garnered significant attention and acknowledgement. The emergence of this phenomenon may be attributed to Pollitt's (2013) recognition that sustainability has attracted attention in academic circles and the media. Concurrently, individuals from many backgrounds are actively striving for sustainability as a means to secure improved prospects. Thus, this concept is extensively employed as a catalyst for implementing inventive tactics aimed at enhancing individuals' standard of living. Despite not being a novel concept, individuals have been diligently striving to attain sustainability, a challenging and pressing endeavour (Soini and Dessein, 2015).

Various strategies have been devised and put into action to encourage the development of sustainable urban settings. These strategies aim to tackle the complex and multifaceted issues that society encounters on a daily basis in the realm of the urban environment. Cultural heritage is a highly important resource that has significant beneficial effects and demonstrates a crucial role in promoting sustainable development, as recognised by researchers and policymakers (Soini and Dessein, 2015; Labadi and Logan, 2016; Labadi, 2022). In-depth examinations of these impacts may be found in publications such as "Routledge Studies in Culture and Sustainable Development". Soini and Dessein (2015) argue that cultural heritage serves as an intermediary for introducing new research, rules, and practices, rather than just being a means of adopting sustainability. According to this framework, we can also assume that the integration of cultural heritage in climate governance within the urban context can only have positive outcomes (Lillevold and Haarstad, 2019; Labadi, 2022).

Cultural heritage plays a significant role in fostering sustainable development through several means, such as influencing people's everyday lives, shaping the development of urban areas and

landscapes, promoting tourism, and establishing the social norms associated with urbanisation. Therefore, it is imperative for cities and local administrations through climate government and policies to formulate strategies to address the various facets of urbanisation, including the efficient integration of cultural heritage in the cities' strategies; that way cultural heritage can be preserved but also used as a tool for innovative and sustainable solutions against climate change (Soini and Dessein, 2015; Labadi and Logan, 2016; Lillevold and Haarstad 2019; Fouseki, Guttormsen and Swensen, 2020; Labadi, 2022).

Preserving heritage is crucial for enhancing urban sustainability and bolstering resilience against future difficulties, particularly in the context of sustaining “static” structures. Preserving old structures is intrinsically linked to sustainability as it conserves stored energy and reduces the demand for fresh energy and raw resources (Ripp and Lukat, 2014). However, it is crucial to emphasise the adaptation of a holistic and anthropocentric perspective on heritage. It regards the preservation of buildings as maybe the least significant aspect in the interconnected link between sustainability and heritage. According to Auclair and Fairclough (2015), the primary significance of this link is in the cultural and social impact of heritage on a regular basis. This impact influences individuals' lifestyles, as well as the development of their identities and relationships.

From the outset, this study has asserted that heritage should not be solely perceived in terms of fixed entities such as buildings and monuments. Instead, it advocates for a heritage approach that is focused on people. This perspective aligns with the human-centric approaches to heritage that English Heritage has been promoting since 1997. The Faro Convention, established by the Council of Europe in 2005, reinforces this approach by highlighting the integration of sustainable development ideas into historic practices. Irrespective of the significance of the architectural heritage in terms of physical, emotional, or symbolic value, individuals and varied groups constantly coexist inside it. The expansive notion of tradition, also known as “everyday heritage” (Auclair and Fairclough, 2015), greatly affects our self-perception, lifestyle, and attitude to shaping the future. Engaging with heritage, which entails cultural and social exchanges with the past to carry them into the present and create a route towards the future, is one of its main contributions to sustainability (UNESCO, 2015).

ICOMOS has an extensive track record of promoting sustainability since its establishment in 1964. This pledge aligns with the principles of the Venice Charter, which places emphasis on safeguarding

cultural treasures for the use of future generations. The dedication to sustainability was emphasised by the 2011 Paris Declaration and solidified in 2015 by the approval of the UN 2030 Agenda and the establishment of the SDGs Working Group. Heritage has long been overlooked in discussions about sustainable development, even though it plays a crucial role in supporting social, economic, and environmental objectives (UNESCO, 2015; Climate Change and Cultural Heritage Working Group International, 2019).

The UN General Assembly adopted the 2030 Agenda in response to urgent requests from national and local stakeholders. This agenda, recognises the essential role of cultural heritage, particularly creativity and cultural heritage, in driving sustainable development for all the SDGs. According to this approach, World Heritage sites have the potential to serve as experimental areas for novel concepts that emphasise the significance of heritage in achieving sustainable development (UNESCO, 2015; Fouseki, Guttormsen and Swensen, 2020; Labadi, 2022).

The 20th General Assembly of the States Parties to the World Heritage Convention established a policy on the 19th of November, 2015, on the incorporation of a sustainable development viewpoint within the Convention's proceedings. The primary objective of this policy is to different stakeholders involved on how to effectively utilise World Heritage sites and heritage in order to promote sustainable development and derive benefits from them. By undertaking this action, the objective is to uphold the core aim of the Convention, which is to safeguard the OUV of World Heritage sites, while also enhancing the effectiveness and relevance of the Convention. The implementation of the Convention has undergone a substantial change with the adoption of this strategy, which is considered a remarkable milestone in its history (UNESCO, 2015).

The response to the question, “How does heritage contribute to sustainable development?” encompasses several approaches, since heritage may help enhance sustainable settings by addressing their vulnerability. Below are many ways that can be employed to accomplish this goal, as suggested by Auclair and Fairclough (2015):

- Preservation and Protection: Preserving and defending cultural heritage resources, which include historical sites, buildings, artefacts, and intangible cultural traditions, are essential tasks. Preservation is essential to preserving cultural identity because it guarantees that heritage will be available to future generations.

- Tourism and Economic Development: The promotion of heritage tourism has the potential to increase revenue, create job opportunities, and strengthen local economies while also raising awareness regarding heritage appreciation.
- Community Involvement: It becomes clear that one of the most important components in the protection and care of cultural heritage is the active participation of local communities. These communities are rich in heritage-related knowledge and customs, and their involvement is essential to maintaining the legacy's long-term viability.
- Education and Public Awareness: It is crucial to raise awareness about the value of cultural heritage and how it is essential to sustainable development. This includes formal education programmes as well as public awareness campaigns that try to instil a sense of accountability for the preservation of cultural heritage.
- Adaptive Utilisation: Heritage assets are revitalised while maintaining their historical significance when old buildings are repurposed for modern uses like museums, community centres, or cultural hubs.
- Innovative Technological Applications: By utilising cutting-edge tools like virtual reality, digital documentation, and 3D scanning, heritage sites can be more approachable and interesting to visitors while also being better preserved and interpreted.
- Policy Integration and Comprehensive Planning: Heritage is given proper consideration within larger developmental endeavours when it is integrated into urban and regional planning, zoning regulations, and development policies.
- Sustainable Conservation Practises: Using environmentally sound conservation materials or energy-efficient lighting in historic buildings are examples of sustainable conservation practices that help reduce the environmental impact of preservation efforts.

- Intangible Heritage: Maintaining cultural diversity and advancing sustainable development depends on the recognition and preservation of intangible heritage, such as music, dance, ceremonies, and oral traditions.
- Interdisciplinary Cooperation: Promoting cooperation between environmental organisations, cultural heritage authorities, urban planners, and other sectors makes it easier to adopt comprehensive strategies that take into consideration how heritage is connected to broader development goals.
- Research and Documentation: Understanding the historical, cultural, and societal contexts of cultural heritage is crucial for their preservation and sustainable management. This can be achieved through conducting thorough research and documenting these assets in their entirety.
- Participation in International Initiatives: Taking part in international initiatives and agreements, like the SDGs and the UNESCO World Heritage programme, provides frameworks and resources that facilitate the easy incorporation of heritage into sustainable development strategies.

Moreover, there are several approaches utilising heritage in a manner that upholds the ideals of sustainable development. The primary objectives of programmes such as Lübeck's “Green Cities” or “Smart Cities” are to promote climate change mitigation and sustainable urban environment progress, which once again confirms the necessity to make cultural heritage an integral part of climate governance within cities, since sustainability, resilience and climate strategies are all correlated (Ripp and Lukat, 2014). The aforementioned programmes have been developed due to the continuous global challenges that affect historic cities and their need to respond (Fouseki, Guttormsen and Swensen, 2020). To improve the quality of daily life for its residents and establish itself as a prominent business centre, Lübeck, a renowned Hanseatic city, for instance, with a series of cultural attractions that appeal to tourists, intends to digitise its extensive cultural heritage and transition into a smart city. The key categories are housing, infrastructure, business, environmental and climate mitigation, and tourism (Hansestadt Lübeck, 2023).

As previously stated, people-centred heritage methods necessitate imaginative and innovative efforts that act as catalysts for social unity and the cultural and economic rejuvenation of urban cities (Fouseki and Nikolaou, 2018). Fouseki et al. (2020) have reported notable progress in

comprehending the intersection between heritage and sustainability in Germany's designated historic cities, for instance, Lübeck, Regensburg, and Bamberg.

Moreover, the 2030 Agenda for Sustainable Development incorporates cultural heritage. This particularly applies to the eleventh objective, which pertains to the establishment of inclusive, secure, and sustainable urban areas. However, it is crucial to note that the scope of this particular reference is relatively limited since it primarily concentrates on the conservation and safeguarding of cultural heritage in a wide context. The relationship between cultural heritage and its active contribution to sustainable development is ambiguous. Hence, cultural heritage should be seen as a way to promote and establish sustainable production and consumption practices, emphasising its role as a tool for enhancing the sustainability of cities and urban landscapes (Labadi and Logan, 2016; Nocca 2017; Fouseki, Guttormsen and Swensen, 2020; Labadi, 2022).

This chapter has examined the interplay between cultural heritage and sustainability, emphasising their inherent connection in confronting contemporary problems, particularly those arising from climate change. I have analysed the evolving perspectives on sustainability, highlighting its relevance in urban cities and regarding it as an ongoing progression. I have also discussed the significant role that cultural heritage can play in bolstering sustainability and facilitating adaptation to climate change, underscoring its many functions in safeguarding identities, promoting social cohesion, and enhancing catastrophe risk reduction. In the upcoming chapter, I will focus on resilience and cultural heritage which is also a part of climate governance.

2.5 Heritage for Future Resilient Urban Environments

Resilience, within urban settings, refers to the capacity to adapt and withstand in response to the difficulties presented by climate change (Directorate-General for Education, Youth, Sport and Culture (European Commission), 2022). This chapter investigates the intersection between heritage and resilience which can be only achieved through the integration of cultural heritage into climate governance.

As previously said, cultural heritage serves not only as a method to attain sustainability but also demonstrates a crucial part in achieving resilience. The concept of resilience has gained significant interest in recent years, with scholars like Gustafsson and Ripp (2023) or the Directorate-General for Education, Youth, Sport and Culture (European Commission), (2022) highlighting its connection to cultural heritage. The latter serves as a valuable instrument for enhancing urban resilience and may be utilised as an indicator to evaluate various risks, particularly in the context of climate change (Ripp and Lukat, 2014). Therefore, it is crucial to integrate cultural heritage into urban development plans, and climate governance, and utilise it as a versatile framework for innovative, sustainable, and fair repurposing and preservation. Gustafsson and Ripp (2023) emphasised the economic, social, and cultural dimensions of this approach.

In addition, Gustafsson and Ripp (2023) noted an important perspective: while UNESCO is developing 22 new indicators to monitor cultural heritage in relation to the UN SDGs, it is essential to recognise that the preservation of cultural heritage should not be perceived as a burden on society. Instead, it should be regarded as a powerful tool that may be used for both resilience and environmental objectives. The UN (2017) has delineated the New Urban Agenda, which is remarkable for its inclusion of resilience and cultural heritage, but without establishing a distinct correlation between the two.

Considering the limited discussion of urban resilience in different policy arenas, it is essential to comprehend the definition and mechanisms of resilience in connection to climate change concerns (Cheek and Chmutina, 2022). Urban areas like Lübeck, Regensburg and Bamberg in Germany have been shown to encounter a range of challenges, including frequent or irregular occurrences such as hazards or fluctuations in temperature (Fabbriatti, Boissenin, and Citoni, 2020). However, it is

important to note that most of these challenges might potentially pose concealed risks in the long run.

Since the beginning of this research the term “resilience” has been mentioned a lot and therefore it is essential to provide the readers with a definition. Resilience, according to the definition provided by Berkes and Ross (2013), is a dynamic mechanism through which individuals experience personal development in the face of challenges and demonstrate the capacity to adjust and adapt. They emphasise that resilience is an ongoing process rather than a static result. In the field of urban studies, resilience is examined in terms of its evolutionary perspective, in contrast to psychology (Davoudi et al., 2012; Ripp and Lukat, 2014). Resilience, in this context, is not perceived as a static asset, but rather as a continuous and dynamic progression that emphasises human advancement and maturation, rather than a stagnant condition (Davoudi et al., 2012). Expanding upon this examination, Folke et al. (2010) offered a more extensive comprehension of resilience as a dynamic procedure that includes intentional aspects of human engagement, such as perseverance, adaptability, transformability, and readiness (Davoudi et al., 2012). According to Galderisi (2018), social systems play a vital role in the formation of resilient cities, with institutions and social capital being particularly important factors. Resilience may be viewed as a strategic method for reducing the effects of natural disasters and climate-related hazards, such as floods. This is particularly relevant for historic cities situated close to water bodies, like the city of Lübeck or Regensburg. Thus, it is essential for historic cities to integrate cultural heritage into climate governance through successful strategies and projects in order to achieve resilience.

Several projects and efforts, such as the “RescueMe” project, have been created to integrate cultural heritage and resilience, despite the existing research gap that I have identified since the beginning of this research. The “RescueMe”, which stands for “Resilient Cultural Landscapes and Communities”, initiative aims to enhance the resilience of coastal cultural landscapes via research supported by the Horizon Europe Programme ('Equitable RESilience solutions to strengthen the link between CUltural landscapEs and coMMunitiEs,' 2023). This initiative maximises the use of available resources, engages local stakeholders, simplifies decision-making processes, and promotes the implementation of resilience solutions that have been collaboratively created, all with the aim of safeguarding cultural heritage. The project utilises a range of state-of-the-art technologies and processes that are specially intended for catastrophe risk management and climate adaptation,

with the aim of achieving improved resilience. Hamburg's Neuwerk Island actively participates in this programme.

Moreover, the ARCH Project is a noteworthy endeavour that showcases the correlation between resilience and heritage. The primary objective of the ARCH project, which stands for “advancing resilience of historic areas against climate-related and other hazards”, is to strengthen the resilience of places that have cultural heritage of importance, particularly in addressing potential dangers associated with climate change. The initiative adopts a co-creative approach by actively involving local policymakers, practitioners, and community people (Latinos and Rebollo, 2020). The project aims to create a collaborative platform for catastrophe risk management that will focus on enhancing resilience. Furthermore, as stated by Latinos and Rebollo (2020), the project will provide a diverse array of models and approaches to facilitate decision-making at various stages of the processes associated with disaster risk, climate adaptation, and cultural asset management, which identifies this study main focus on climate governance and cultural heritage (Lindner et al., 2021).

It is worth mentioning that in 2013, international treaties recognised the importance of cultural heritage in reducing global risks, namely by strengthening community resilience (UNESCO, 2013). This represented a significant change in the prevailing model or pattern. The Hangzhou Declaration, titled “Placing Culture at the Heart of Sustainable Development Policies,” highlighted the importance of preserving historic landscapes to enhance communities’ ability to withstand natural disasters and climate change. This should be done in conjunction with scientific knowledge (UNESCO, 2013). The Third UN World Conference on Disaster Risk Reduction (DRR) acknowledged the significance of cultural heritage in advancing DRR, post-disaster rehabilitation and recovery, and local economic and social development. This recognition led to the adoption of the Sendai Framework for DRR 2015–2030 (UN Office For Disaster Risk Reduction, 2015). The “Resilient Cultural Heritage” session highlighted the need to incorporate the cultural context, particularly cultural heritage, into disaster risk reduction policies and programmes to ensure their sustainability and effectiveness (UN Office For Disaster Risk Reduction, 2015).

In the future, cultural heritage will have a diverse function in driving development, as emphasised by the 2030 Agenda for Sustainable Development (UNESCO, 2015) and the New Urban Agenda (UN, 2016). Heritage is portrayed as a reservoir of sagacity, ingenuity, and originality, as well as a mechanism for tackling issues and generating resolutions. Hosagrahar et al., (2016) emphasise the

significance of culture in influencing identities and fostering inclusive and fair development. The significance of culture in revitalising urban regions, promoting social engagement, and fostering prosperous, sustainable, and inclusive urban economies is emphasised in the Habitat III document of the UN Conference on Housing and Sustainable Urban Development (UN, 2016). The examination of the correlation between heritage and resilience is an area of research that is growing and evolving in academic discussions. This discourse, while primarily focused on specific sectors, commonly starts by acknowledging the imperative of safeguarding cultural heritage due to its significant influence on individuals' overall quality of life and welfare (Azadeh et al., 2017).

Examining the incorporation of cultural heritage within the framework of resilience and climate governance is essential from a pragmatic perspective. To do this, historic cities must develop and implement resilience and adaptation strategies, therefore enhancing their capacity to protect inhabitants from the impacts of natural disasters, human-caused incidents, and climate change-related risks. As to the European Resilience Management Guideline (2018), urban settings that possess resilience have the ability to recognise, incorporate, adjust to, and surmount diverse problems. These cities actively engage local stakeholders, placing a strong emphasis on public engagement in catastrophe risk management. Furthermore, a resilient city is characterised by its ability to adapt successfully in the presence of unpredictability, decrease vulnerability, and enhance its ability to handle climate change threats and other unanticipated long-term challenges. Cultural heritage is a valuable instrument for enhancing these processes.

As previously said, there is a noticeable shift towards a heritage that prioritises the needs and experiences of individuals. Significantly, sites of historical importance, such as the old town of Regensburg, which is included on UNESCO's World Heritage list, are more susceptible to the adverse impacts of climate change. It is crucial to prioritise proactive “preparedness” measures in order to enhance their resilience. These strategic measures are crucial as they uphold their ecological, social, and economic roles while also safeguarding their cultural heritage. Through these measures, the sites' enduring importance for both current and future generations is ensured.

Despite the significant lack of study in this field, it is evident that cultural heritage has the potential to act as a catalyst for collaborative initiatives that enhance resilience. This cooperative method empowers communities to envision alternative futures characterised by enhanced resilience in the face of various challenges. The results of this analysis align with the principles outlined in the

Framework Convention on the Value of Cultural Heritage for Society ('Council of Europe Framework Convention on the Value of Cultural Heritage for Society, 27 October 2005,' 2007). It redirects the primary focus from stationary things and locations to the pivotal role that individuals assume. Cultural heritage encompasses a wide array of historical artefacts that individuals from many origins employ to express their evolving values, principles, traditions, and convictions. This intricate interplay between individuals and their environment encompasses every aspect of the surrounding topography (Fabbricatti, Boissenin, and Citoni, 2020).

This chapter has explored the significant impact of cultural heritage on enhancing urban resilience, specifically highlighting how the preservation of heritage acts as a method of improving resilience and environmental sustainability through climate governance. Examining the integration of cultural heritage into urban policies might provide insights into constructing cities that are resistant to the impacts of climate change and unforeseen circumstances. In the next chapter, I examine the intricate function that UNESCO World Heritage sites fulfil within the broader context of climate change. The study delves into the specific strategies employed by old towns and historic cities that have been designated to mitigate the impact of climate change on these areas. It also sheds light on the challenges that hinder the successful implementation of these measures.

2.6 Climate Governance and the UNESCO Effect

UNESCO-designated heritage sites are globally acknowledged for their cultural or natural value, authenticity, and integrity. These sites serve as living monuments that showcase the ecological variety and collective history of humanity. However, these revered sites are now under unprecedented threats as a result of the rapid convergence of urbanisation and climate change, as has been made clear by now. Their survival is being threatened by factors like as escalating sea levels, increasingly severe extreme weather events, and shifting temperature patterns (Harvey and Perry, 2015; Markham et al., 2016; Quesada-Ganuza et al., 2021). Various strategies, efforts, and plans are being put into action in response to these imminent threats. These initiatives are being guided by individuals and local stakeholders, and they align with the human-centred heritage approach advocated in this study report. These initiatives, in close collaboration with UNESCO experts, aim to safeguard these unique sites for future generations by implementing comprehensive climate plans and adaptation measures.

The significance of cultural heritage has become increasingly apparent, particularly when seen from a human-centred and comprehensive standpoint (De Waal et al., 2022). The discourse around climate change, including its adaptation and mitigation methods, as well as the urgent requirement for monitoring and adaptive management, has seen a substantial acceleration in response to the swift emergence of climate change and the escalating decline of biodiversity (Cave, 2022; Daly, 2022). Government entities, municipal authorities, and custodians of heritage exert significant efforts to save cultural heritage sites, particularly those that are included in esteemed registries (Labadi and Logan, 2016). However, within these circumstances, there exists a significant issue about the compatibility of climate change solutions with the conservation of World Heritage sites. Specifically, this issue relies on preserving the purity and genuineness of these revered locations - an equilibrium that I will thoroughly delve into.

The preservation of cultural heritage has consistently faced significant threats due to the impact of climate change. The 1972 preamble of the World Heritage Convention emphasised the crucial imperative of protecting cultural and natural sites from environmental hazards, thereby indicating its early acknowledgement (Cave, 2022).

The threats caused by climate change have not only persisted but even intensified since that time. Consequently, since the ratification of the Paris Agreement in 2015, the global objective has been to limit global warming to 2 degrees Celsius or less, thus inherently safeguarding cultural heritage. In order to achieve this objective, it is necessary to stabilise the amount of greenhouse gas emissions. Given that these greenhouse gases are the primary catalyst for many climatic consequences, including heatwaves, increasing temperatures, droughts, and rising water levels, undertaking this essential measure is important. As emphasised by Cave (2022), these repercussions have significant implications not just for cultural heritage sites but also for human life and biodiversity. It is important to reiterate that this is a vital component due to the focus on the well-being and involvement of individuals in preserving history.

A lot of scholars, such as Auclair and Fairclough (2015); or Cave (2022), argue in favour of adopting a humanistic approach when considering heritage, highlighting its significance. The influence of climate change on cultural heritage may be inconspicuous, yet it might provide a substantial transformative impact. The volatility of social and environmental circumstances is a prime example of an indirect peril that unavoidably affects individuals' day-to-day existence and their interactions with World Heritage sites. In practical terms, this might lead to scenarios where individuals are compelled to move to alternative regions, ultimately severing their ties to historical landmarks. Hence, the act of relocating individuals from regions of notable cultural significance has the capacity to disrupt the unique dynamics of operational World Heritage sites, thus impeding their preservation and continuity (Harvey and Perry, 2015). Moreover, this demographic transition may give rise to unprecedented consequences in the realms of society, politics, and economics (Daly, 2022). Alternatively, when cultural heritage is utilised effectively, it may serve as a proactive strategy for developing resilience and mitigating the threats linked to climate change (Osipova et al., 2016). Cave (2022) has verified that World Heritage sites have the capacity to provide benchmarks for optimal preservation practices in addressing the effects and causes of climate-related threats. This entails meticulous planning, adjustment, alleviation, and the formulation of climate policies. However, it becomes evident that this mostly pertains to local administration when I go more into the topic.

The implementation of climate strategies to mitigate and adapt is crucial for effectively managing cultural heritage sites against climate change. Mitigation could be briefly described as the implementation of policies and efforts to reduce greenhouse gas emissions (Sesana et al., 2018). On

the other hand, adaptation refers to the process of modifying ecological, social, and economic systems in order to respond to current or predicted climate-related stimuli and the resulting impacts or consequences that follow (UNFCCC, 2022). The area of climate change research and policy has focused more on mitigation techniques rather than adaptation (Sesana et al., 2018). Mitigation techniques in the cultural heritage field involve implementing actions to improve the energy efficiency of buildings, decrease the carbon emissions linked to transportation and production of construction materials, and encourage waste reduction (Sesana et al., 2021).

So far I have conducted comprehensive research on the effects of climate change in areas that include a substantial number of cultural heritage monuments, in particular, historic cities. However, given the lack of existing literature, it is important to emphasise the significant absence of research on climate governance in World Heritage cities.

In a recent publication, titled “50 Years World Heritage Convention, 2022”, Cave has acknowledged the existence of this study gap and significant controversy. Before the publication of this book, Fatoric and Egberts (2020); Kern et al., (2021) also accentuated this gap. It is clear that preserving cultural heritage while also allowing renovation or retrofitting is a challenging endeavour. Transforming cities that are both carbon-neutral and robust to climate change is crucial, while it presents difficulties, especially in the case of historic cities (Kern et al., 2021).

This conflict becomes evident when historical characteristics are compromised in the pursuit of energy efficiency, such as the removal and replacement of historical pieces, or the impact on features like wall murals concealed by insulation. Therefore, heritage sites might be viewed as obstacles to mitigation efforts (Fatoric and Egberts, 2020; Kern et al., 2021; Cave, 2022). The ICOMOS Climate Change and Heritage Working Group has provided a detailed plan of cultural heritage initiatives that promote mutually beneficial outcomes, where the protection of historic assets is in accordance with policies for climate mitigation and adaptation. Likewise, ensuring the preservation and genuineness of cultural sites might pose challenges with the implementation of adaptation measures. Constructing roofs and shelters to shield monuments from adverse weather conditions might compromise the visual integrity and authenticity. In accordance with the operational rules of the World Heritage Convention, the significance of a World Heritage site, such as the mediaeval town of Bamberg in Bavaria, in the case of this research, heavily relies on its

authenticity and integrity (Climate Change and Cultural Heritage Working Group International, 2019). This statement has a problematic narrative that affects climate governance.

According to Daly's (2022) insightful observation, it may be important to endure a significant change in values and beliefs. This might be a significant obstacle for the World Heritage system. Encouraging the adaptation of historic resources to adapt to a changing environment may appear contradictory to the goal of conserving their OUV and World Heritage designation. In the event of a highly unfavourable situation, state parties can display hesitancy in recognising the full magnitude of the consequences of climate change or in implementing the essential steps for adaptation due to concerns about forfeiting their World Heritage status. Boccardi (2019) has emphasised the inherent ambiguity of the authenticity notion, which might potentially be advantageous in addressing the issue of climate change. This is because its interpretability and applicability can be adjusted according to different circumstances. Fatoric and Egbert (2020) extensively discuss the correlation between cultural heritage and climate change. Put simply, the lack of efficient communication, collaboration, and common understanding between the heritage sector and other fields such, as environmental and socio-economic might limit the potential for working together effectively and providing continued benefits from heritage. This can lead to unforeseen conflicts and negative outcomes.

To summarise, climate change presents a significant risk to heritage sites as it may result in the potential erosion of their OUV, a core concept outlined in the Convention. Especially susceptible are terrestrial regions located near unprotected coastlines that are prone to erosion and the increase in sea level. Climate change has the capacity to replace the fundamental ideas that make up the OUV. Furthermore, historic places have a significant impact on the ever-changing socio-cultural dynamics, and the most treasured aspects of communities may experience alterations as a result of the mounting pressures caused by the loss of biodiversity and climate change (Harvey and Perry, 2015; Cave, 2022; Daly, 2022).

Therefore, considering the swift transformations occurring globally, World Heritage sites need to effectively handle their OUV while upholding the principles of fairness and considering the specific vulnerabilities and capabilities of the countries involved. In addition, Cave (2022) asserts that there is a need for a comprehensive World Heritage strategy on climate change. Simultaneously, there is a significant need for the implementation of a new and innovative formula that bridges the research

gap between cultural heritage preservation and climate governance. In other words, a formula that solves the problematic narrative of the UNESCO effect in the name of the OUV of historic cities. The research gap that has been identified (Fatoric and Egberts, 2020; Kern et al., 2021, Cave, 2022) needs to be explored deeper in order to demonstrate a comprehensive guideline towards climate governance and cultural heritage in historic cities. In turn, I believe that the fact that the field of climate governance and the integration/adaptation of cultural heritage presents a black hole is also important. Consequently, collaboration within departments and different stakeholders is essential to tackle these significant difficulties. This study will delve deeper into this issue, namely by examining the case studies.

2.7 Conclusion

The objective of this literature overview was to discuss and combine current knowledge and scholarly references in the areas of climate change, climate governance, and cultural heritage. I have tried to provide the readers with a comprehensive analysis of the literature that explores cultural heritage and the substantial obstacles presented by climate change. My initial observation as I initially highlighted, reveals the lack of a distinct theoretical framework for the overlap between climate governance and cultural heritage. In light of this discrepancy, it is crucial to incorporate specific elements of climate change, sustainability, resilience, and cultural heritage in order to establish a comprehensive body of literature that supports the main goal of this research. This method is essential for facilitating the forthcoming methodology part, which examines the influence of UNESCO's status on climate governance in World Heritage cities. During my investigation, I continuously noticed the lack of a strong and all-encompassing scholarly foundation on this topic.

3. Methodology

This chapter explores the techniques used to investigate the main study question, “How does the UNESCO World Heritage status in historic cities affect climate governance?”. My research involves the examination of three mid-sized distinct mediaeval German cities: Lübeck, Regensburg, and Bamberg. All three of these case studies have been inscribed as UNESCO World Heritage cities because they meet the selection criteria.

Currently, there are ten Selection Criteria that must be fulfilled by a location, object, or heritage practice to be considered for inclusion (Harrison, 2010). The nominated locations, including my case studies, are characterised as having OUV and fulfilling at least one of the ten criteria. This aforementioned type of city has not been thoroughly examined and through these facts arises a significant research gap (Fatoric and Egberts, 2021; Kern et al., 2021; Cave, 2022; Haupt et al., 2022). This examination includes conducting interviews and analysing official documents. The selection of these particular cities was based on their distinct attributes: they are not considered forerunners in climate governance, they are independent cities, and they have a mediaeval heritage (Otto et al., 2021; Otto, Göpfert, and Thielen, 2021).

Upon analysing the three case studies, it becomes apparent that Regensburg is the leading city, particularly because of its innovative efforts; a fact that can be proved in the comparative analysis of this research. Lübeck closely follows behind, with its local government, particularly the Climate Department, demonstrating a noteworthy dedication to climate governance. Conversely, Bamberg falls behind in comparison. The findings above will undergo further investigation in the subsequent section dedicated to comparative analysis and the latter notes regarding the cities’ position would be efficiently proved. Additional German cities were intentionally excluded owing to differences in their historical setting and layout, degree of autonomy, and climate governance efforts. The initial consideration of the historic centres of Stralsund and Wismar, the historic town of Goslar, and the old town of Quedlinburg was primarily based on their UNESCO status and mediaeval heritage. However, these World Heritage sites were ultimately eliminated from further consideration due to their limited size and absence of independent city status. Weimar, a municipality with independent status and a designated UNESCO status did not meet the criteria for the mediaeval framework of this research and therefore it was considered that this research will not benefit from this case study since the three cities I am examining share similar characteristics.

3.1 Research Design

The primary focus of this study approach is to conduct qualitative research through in-depth interviews with important stakeholders in climate governance and cultural heritage as well as a comparative analysis. This is done to address an issue that has not been fully answered previously. Sovacool, Axsen, and Sorrell (2018) identified this as a crucial criterion for doing efficient research. Regarding my circumstances, the qualitative research design encompasses a range of diverse methodologies for gathering and then synthesising outcomes based on the viewpoints, attitudes, and comprehensions of individuals (Sovacool, Axsen, and Sorrell, 2018).

Moreover, the purpose of the comparative analysis through three selected case studies is to present a detailed depiction of how the climate governance of each city is influenced by its UNESCO World Heritage status. The justification for the comparative analysis lies in the study objectives and the selection of case studies. Moreover, conducting a comparative analysis can yield practical implications as my findings have the potential to contribute to both theory and practice. Case studies involve a comprehensive analysis of one or more study subjects and are typically used as a means of conducting a deep investigation into a specific topic; in my case World Heritage cities and climate governance. The rationale for choosing case studies lies in the fact that, rather than relying on statistical analysis or data, the case study method involves a comprehensive examination of one or more specific cases, such as individuals or cities, along with their relevant contextual factors. This approach often incorporates various sources of evidence, such as documents, interviews, or direct observation (Sovacool, Axsen, and Sorrell, 2018).

3.2 Data Collection Methods

Data is collected through interviews conducted with various municipal authorities, including those from departments such as preservation, city council, climate, and monument protection. I strengthen my approach by conducting these interviews. This increases the empirical basis of my research. Interacting with important stakeholders improves my comprehension of the complex connection between preserving cultural heritage and creating sustainable urban living environments. Readers are encouraged to explore the main focus of my comparative research, which integrates theory and practice to develop inventive methods for urban sustainability and cultural resilience.

Moreover, a combination of snowball sampling was utilised in this research. This approach allowed for the gathering of data from individuals related to the subject matter which could provide valuable context and information. The active participation at a significant conference which highly concerns the research focus has also been included as a way of data collection since the invitation to this conference came from one of the interviewers. As it was already mentioned in order to conduct this research the fundamental analysis of the climate strategies and heritage management plans that each city has was mandatory. That is because these documents provide essential details to comprehend if cultural heritage has been integrated into climate governance strategies as well as the opposite concerning heritage management plans.

In terms of methodology, a comparative approach is necessary to analyse these corresponding cities. Academic literature includes theoretical contributions to independent local climate governance and World Heritage cities. Nevertheless, my work represents a revolutionary effort, adeptly merging these two distinct literary streams. My empirical findings not only fill a gap void in the requirement for a complete theoretical framework, but they also indicate potential areas for further research at the centre of cultural heritage and climate governance.

3.3 Ethical Considerations

The appropriate institutional review boards have granted ethical approvals, guaranteeing adherence to moral guidelines. Every participant has given their informed consent, and safeguards to preserve their privacy and confidentiality have been put in place.

3.4 Data Collection Timeline

The study was conducted within the four-month timeframe (from November to March) allocated by the Brandenburg University of Technology Cottbus-Senftenberg.

3.5 Limitations

This research faces limitations stemming from its master's level thesis nature, including the constricted timeframe allocated for in-depth data collection. The targeted and relatively small sample size may not fully capture the diverse range of perspectives. Challenges such as language

barriers and departmental conflicts among contact persons impacted the study's scope. One more limitation is the refusal of some stakeholders to give interviews due to the sensitivity of the topic. Although efforts were made to conduct interviews with key individuals in Lübeck, Regensburg, and Bamberg, the sample size remains modest. The study's applicability may be constrained to the selected cities, and the scarcity of comprehensive literature on the intersection of climate governance and cultural heritage limits the breadth of my investigation.

3.6 Participants or Sample

For this research, participants were chosen based on their expertise in city development, climate governance, and cultural preservation. To ensure the accuracy of the results, individuals from both the Climate and Monument Protection Departments as well as Heritage Offices were interviewed in each city. In Regensburg and Bamberg where no correspondence was given from contact persons from the Climate Departments, I managed to interview political members who are also part of the cities' council and their main duties concern climate policies. At the same time in Regensburg although the Monument Department was willing to give me an interview, after I delved deeper into my topic they did not want to participate. Moreover, in Bamberg, the Monument Protection Department considered that the right contact person for my topic is the World Heritage Office, although, in my discussion with them, I realised that they mostly deal with tourism and urban gardening practices.

Interviewees were selected through a combination of thorough research and recommendations from contact persons. Given that this is a comparative analysis involving three case studies, achieving a balance in the selection of interviewees was deemed crucial for the research's validity. Therefore, it was a mandatory objective to interview, from each city, at least one contact person from the Climate Protection Department and the Monument Protection Department or the World Heritage Office. In other words, participants and stakeholders were chosen based on their relevance and connection to the research aims and objectives. Additionally, connecting with individuals actively engaged in politics and serving on the city council was considered important. As part of the research activities, attendance at a conference on climate mitigation and cultural heritage in Belgium was undertaken following an invitation from my contact in Regensburg. Last but not least, Latinos, the Head of Resilience and Climate Adaptation of the International Council for Local Environmental Initiatives

(ICLEI) was interviewed as well, since he is dealing with this topic and has also worked with the city of Regensburg.

More analytically:

Table 1: Interviewers

Lübeck	Regensburg	Bamberg	Other
Climate Protection Department - Interview 1	World Heritage Coordinator Regensburg - Interview 5	Volunteer at the World Heritage Office - Interview 7	Regional Conference 2023 for Northwest Europe and North America in Bruges/ Belgium - Climate Change and Heritage - Mitigating the Challenges for Keeping our Cities Liveable Spaces - Interview 10
Climate Protection Department - Interview 2	Member of the City Council & the Green Party - Interview 6	University of Bamberg, Department of Materials and Preservation Science - Interview 8	Vasileios Latinos, Head of Resilience & Climate Adaptation - Berlin Office
Department of Archaeology and Monument Conservation and World Heritage Management, Hanseatic City of Lübeck - Interview 3		Member of the City Council & the Green Party - Interview 9	
Department of Archaeology and Monument Conservation and World Heritage Management, Hanseatic City of Lübeck - Interview 4			

3.7 Conclusion

The approach employed aligns with the study's objectives and provides a thorough examination of how the UNESCO World Heritage status affects climate governance in World Heritage cities. This study seeks to elucidate the intricate correlation between climate governance and cultural preservation in UNESCO World Heritage cities by conducting interviews with key stakeholders and doing a comparative analysis.

4. Findings and Comparative Analysis

This chapter initiates the investigation into the cities of Lübeck, Regensburg, and Bamberg, marking the start of a comprehensive comparative analysis. The technique employed for this inquiry involves conducting interviews within the historic cities and thoroughly examining a wide range of documents, such as heritage management plans, climate change policies, as well as adaptation, mitigation and resilient plans. This methodical approach aims to achieve a comprehensive understanding of the complex correlation between cultural heritage and climate governance in World Heritage cities.

Before delving into the main focus of the research, it is essential to provide readers with important information regarding the case studies and their distinct plans for managing their heritage. These plans are the fundamental principles that support the governance structures of the cities, closely connected to their UNESCO status and climate change policies. It is crucial to comprehend the intricacies of these plans, as they offer a valuable understanding of how cultural heritage is being preserved and utilised in the face of climate change issues.

The analysis of Lübeck, Regensburg, and Bamberg presents a varied array of strategies for managing cultural assets and addressing climate governance. Lübeck exhibits a praiseworthy dedication to climate governance and provides valuable perspectives on incorporating cultural preservation within this framework. Regensburg stands up as a leading candidate, characterised by its innovative efforts in both areas. On the other hand, Bamberg demonstrates a situation where the management of heritage and the administration of climate may not be closely connected, indicating possible opportunities for enhancement and creativity.

As I further examine these case studies, my goal is to understand the intricate relationship between cultural heritage and climate governance. Through careful examination of the policies, practices, and issues encountered by each city, my aim is to extract useful lessons and exemplary methods that might enlighten and motivate sustainable urban development initiatives on a global scale. With this interdisciplinary investigation, I aim to contribute to the discussion on how to protect cultural heritage in the midst of climate change, thus creating opportunities for strong and inclusive urban futures.

4.1 Hanseatic City of Lübeck

Lübeck, established in the 12th century, served as the principal and renowned city of the Hanseatic League. Lübeck served as a prominent trading centre for northern Europe from the 12th century to the 16th century. It continues to serve as the primary centre for marine commerce, especially with the Nordic countries. The fundamental structure of the old city remains unchanged despite the destruction caused by World War Two (WW II). It is characterised by churches, salt storehouses, renowned public monuments such as the Holstentor brick gate, and affluent residences from the 15th and 16th centuries (UNESCO, 2011).



Fig. 1: Hanseatic City of Lübeck.
Source: Hanseatic City of Lübeck, n.d.

Lübeck, a city known also as the Queen of the Hanseatic League, was inscribed on the World Heritage List in 1987 based on criteria (iv). The designated area encompasses 81.1 hectares, with an additional buffer zone spanning 693.8 hectares. Lübeck was founded in 1143 on the northern coast of Germany along the Baltic Sea and had a prominent role as a member of the Hanseatic League from 1230 to 1535. This league consisted of merchant communities that had monopolies on commerce in the North and Baltic Seas. The old town island of the city, characterised by its blade-like form and two parallel traffic arteries, serves as a tangible representation of its historical development as a prominent centre for commerce in Northern Europe. The most affluent sections

are situated in the western region, characterised by opulent residences of prosperous merchants and trade establishments, whilst the eastern part is predominantly occupied by small companies and artisanal enterprises (UNESCO, 2011).

Despite enduring significant destruction during WW II, Lübeck remains an extraordinary mediaeval city adorned with significant historical edifices. The renowned Lübeck Cathedral, along with the other churches, which accommodated the gabled residences of affluent merchants, constituted around twenty per cent of the city that was demolished. The main goal of strategic repair activities was to substitute important churches and monuments (UNESCO, 2011). Based on the population record, the Hanseatic city has a population of 222.000 individuals as of December 31, 2022 (Lübeck.de – Offizielles Stadtportal für die Hansestadt Lübeck, no date).

Except for completely reconstructed zones, Lübeck's World Heritage site has three historically significant regions. The first route extends from the St. Aegidien district in the southern part to the Burgkloster in the northern part. The original architectural structure of Count Adolf von Schauenburg's fortress on the Buku isthmus is conserved in the Burgkloster, a Dominican convent that was built subsequent to the Battle of Bornhöved in 1227. The Koberg site preserves a historic district from the late 1700s, which revolved around a public plaza and included significant landmarks such as the Heilig-Geist-Hospital and the Jakobi Church. The areas between Glockengiesserstrasse and Aegidienstrasse have managed to preserve their mediaeval layout, as evidenced by the presence of several historic structures (UNESCO, 2011).

The second sector is adorned with splendid rows of Patrician mansions from the 15th and 16th centuries, with the Cathedral located to the south and the Petri Church situated to the north. The enclave with salt storehouses and the Holstentor on the left bank of the Trave were renovated during the Hansa era (c. 1250–1400), a time when Lübeck had significant control over Northern European commerce. This renovation was done to improve the monumental character of the area (UNESCO, 2011).

The devastating aftermath of extensive aerial bombardment during WW II is evident in the third district, which encompasses the heart of the mediaeval city and has prominent landmarks such as St. Mary's Church, the Town Hall, and the Market Square. Nevertheless, it remains a poignant testament to Lübeck's history (UNESCO, 2011).

The city's classification under criterion (iv) is attributed to its distinctive architectural style, which exemplifies the influence and historical importance of the Hanseatic League by representing the specific type of buildings that characterise Lübeck (UNESCO, 2011).

The old town quarters are a prominent European landmark that showcases its coherence and cohesiveness via its mediaeval construction, which is an intrinsic characteristic of the Hanseatic Town. The old town is enriched with prominent religious and secular architectural elements, which contribute to the overall image. The town's distinctive profile is defined by seven towering church spires, effectively capturing its overall essence (UNESCO World Heritage Centre, no date a).

Furthermore, the old town is largely encompassed by parks and dams, with water surrounding it from all directions. The central area of the historic city, consisting of churches, salt storehouses, renowned public structures like the Holstentor brick gate, and Patrician residences dating back to the 15th and 16th centuries, managed to endure WW II. The artwork's composition remains easily recognisable as a skillfully crafted and complete piece, and its uniformly shaped outline sets it apart from afar, highlighting its enduring historical importance (UNESCO World Heritage Centre, no date a).

The legislative framework of Schleswig-Holstein and the Federal Republic of Germany grants the Hanseatic City of Lübeck significant legal protections. The Schleswig-Holstein Act on the Protection and Conservation of Sites guarantees the ongoing safeguarding of Old Town Island and its multitude of historical sites (UNESCO World Heritage Centre, no date a).

The Monument Preservation Plan is a crucial part of the preservation framework, as it forms the basis for urban planning and particular architectural interventions. Furthermore, the preservation of the historical centre of Lübeck is ensured by the implementation of a design code and a conservation statute. According to the UNESCO World Heritage Centre (no date a), the preservation regulations also apply to the late 19th-century districts that surround the old town.

The city of Lübeck is tasked with overseeing the administration of the property that has been designated as a World Heritage site. The inclusion of a World Heritage commissioner inside the local administration streamlines the collaboration among parties. By implementing a thorough

monitoring approach and integrating pertinent considerations into planning procedures, the timely identification of potential dangers to the OUV is ensured, therefore promoting the sustainable progress of the World Heritage site. The intricate defensive system, backed by the management plan, guarantees the effective conservation of the property's historical integrity (UNESCO World Heritage Centre, no date a).

In order to enhance the protection and preservation of the OUV, a buffer zone has been designated together with extra view axes extending beyond the buffer zone. The purpose of these protections is to guarantee the structural stability of this culturally significant location and to ensure the long-term safeguarding and conservation of valuable viewpoints (UNESCO World Heritage Centre, no date a).

An analysis of the 2011 management plan “Management Plan the World Heritage Hanseatic City of Lübeck” reveals a conspicuous scarcity of mentions of risks that have an influence on the property. Remarkably, the plan does not succeed in explicitly acknowledging the perils presented by climate change, despite its focus on resolving concerns related to noise pollution and vibrations that impact old buildings. The text does propose remedies such as redirecting traffic and reconfiguring street areas (UNESCO, 2011).

The plausibility of climate change, particularly in the form of inundation, ought to have been regarded with gravity, considering the city's geographical proximity to bodies of water. The management plan prioritises the provision of assistance for the opening and transformation of courtyards to enhance the urban climate, however, it only briefly mentions climate change.

The little treatment of climate change in the management plan raises concerns regarding the comprehensive assessment of potential threats and the incorporation of climate change considerations into preservation strategies. Significantly, the text fails to address the issue of floods, a grave peril linked to climate change within the inscribed old town.

In addition, the 2004 periodic report highlights housing as a significant issue, whereas earlier assessments focused on urban pressure as the primary factor impacting the World Heritage site. The ever-changing nature of the listed dangers underscores the importance of vigilance and adapting conservation strategies in light of emerging challenges.

In 2021, Euronews and Copernicus conducted a special study titled “Europe's eyes on Earth”, which specifically examined the impact of climate change on historic monuments, with Lübeck being the main subject of attention. Wilks (2021) conducted a study to assess the city's vulnerability to rising water levels, taking into account its favourable position surrounded by water. Given its historical significance as a prominent commercial centre in the Middle Ages, Lübeck is susceptible to the impacts of climate change, especially considering the escalating challenges posed by the increasing sea levels.

The same was confirmed by Catharina Vogel, the representative of Lübeck's World Heritage Office, who offered information to Euronews. She said that the city's monument department was actively assessing climate-related hazards, such as droughts, high heat, rising sea levels, and severe rains. Vogel emphasised the need to implement proactive steps to tackle these concerns, recognising the need to protect the city and effectively oversee its World Heritage status (Wilks, 2021).

In an interview with Euronews, Professor Arns, an expert in coastal engineering at the University of Rostock, agreed that Lübeck has a persistent issue with flooding that has progressively worsened. Despite the city's historical significance, its limited dimensions pose obstacles to adapting to the impacts of climate change (Wilks, 2021).

Arns suggested many possible solutions to mitigate the impacts of increasing water levels, including constructing a flood barrier or preventing high water from entering the Trave. However, the installation of flood barriers might potentially endanger the city's historical allure and put its UNESCO designation at risk. Both alternatives are likewise exceedingly costly. This exemplifies the challenging task of finding a delicate equilibrium in vulnerable locations such as Lübeck, where the preservation of cultural heritage must be balanced with the imperative of promptly addressing climate change (Wilks, 2021).

In summary, the 2011 Management Plan does not appear to prioritise the climate change threats faced by the city, and the integration of cultural heritage into climate policies seems lacking. Furthermore, an initial assessment indicates that the UNESCO status influences climate governance in Lübeck. Implementation of projects aimed at enhancing the urban landscape, preserving heritage,

and addressing climate change is hindered, primarily due to concerns about the city's visual impact and the potential loss of authenticity and therefore the UNESCO status.

4.2 Old Town of Regensburg with Stadtamhof

Regensburg, a historic town in Bavaria situated along the Danube River, boasts a plethora of meticulously crafted structures that serve as a testament to its role as a prominent commercial hub that has exerted influence over the region since the 9th century. The town's architecture is a blend of Gothic, Romanesque, and old Roman styles that originated about two thousand years ago. The architectural style from the 11th and 13th centuries in Regensburg, which encompasses the cathedral, city hall, and market, still shapes the city's distinctive attributes, such as tall structures, dimly illuminated streets, and robust defences. Notable features include the Old Bridge, which originates from the 12th century, as well as other churches, towers, and mediaeval noble residences. Regensburg now has a population of around 175.000 citizens, making it the fourth-largest city in Bavaria (Stadt Regensburg - Deutsch - Bürgerservice, no date). Regensburg has seen the most significant population growth among all the model projects. This is apparent from both historical statistics and estimates up to 2025, which suggest a 5.4% anticipated growth in the population (UNESCO World Heritage Centre, no date b).



Fig. 2: Old town of Regensburg with Stadtamhof
Source: Natasha Lazic, n.d.

Regensburg satisfied the requirements (ii), (iii), and (iv) for being included in the list in 2006. The inscription encompasses a total area of 775.6 hectares for the buffer zone, along with an additional

182.8 hectares for the property itself. Criterion (ii) pertains to the architectural features of Regensburg, which exemplify the city's importance as a mediaeval centre of commerce and its influence throughout the northern Alps. Regensburg functioned as a prominent centre for commercial lines that linked mainland Europe with Russia, Italy, Bohemia, and Byzantium. Furthermore, it had several connections to the transcontinental Silk Roads. Consequently, the city showcases a notable interchange of architectural and cultural elements that have shaped its urban surroundings (UNESCO World Heritage Centre, no date b; UNESCO, 2012).

The old town, which was the primary location for the Empire's assembly in the High Middle Ages, is a notable witness to cultural traditions, especially in the Holy Roman Empire. Therefore, it fulfils criteria (iii). Regensburg had a significant role in European history during the period from 1663 until 1806 as the site of the Perpetual Assembly. The remaining structures of two imperial Palatine palaces from the 9th century, along with many other well-preserved old buildings, provide proof of the community's affluence and political importance. These structures serve as tangible evidence of these roles (UNESCO World Heritage Centre, no date b; UNESCO, 2012).

The old town of Regensburg meets also criteria (iv) since it serves as an exceptional portrayal of a mediaeval trading town in central Europe that has preserved its historical phases of growth in a complete manner. Notably, it excelled in fostering commerce during the eleventh and fourteenth centuries (UNESCO World Heritage Centre, no date b; UNESCO, 2012).

The historic city has preserved its integrity and resisted the impact of WW II. Put simply, the preservation of the 14th-century mediaeval structure has been achievable. Given that the city was built exclusively with stone rather than wood, every listed structure has successfully preserved its character. The restoration of the structures is carefully supervised, ensuring that it is carried out accurately, in accordance with current legislation, and with respect for the historical authenticity of the buildings (UNESCO World Heritage Centre, no date b; UNESCO, 2012).

Regensburg, like all other registered cultural heritage sites, is subject to regulations and safeguards. According to UNESCO, the Regensburg inscribed site and its buffer zone have been protected since 1975 by the Bavarian Law for the preservation of historic structures. The inscribed property is also subject to the 1982 Laws pertaining to Local Building Ordinances for the Preservation of the old town of Regensburg, often known as the “Old Town of Regensburg Statutes”. The Federal Building

Code (1986/1997) establishes the legal foundation for the design, development, and construction of projects. The complex network of safeguards, augmented by the management plan and municipal regulations, ensures the property's excellent condition of preservation. Safeguarding the property is a collective obligation of several state and municipal institutions. The administration of the city of Regensburg has control over it. The Steering Committee undertakes integrative monitoring as the foundation of a thorough planning process and sustainable development in the historic town, with a strong commitment to upholding its values. The objective of initiatives is to simultaneously rejuvenate the populated old town and rehabilitate the historical urban structure (UNESCO World Heritage Centre, no date b; UNESCO, 2012).

Given that this study relies on a comparative examination of the three case studies, it is important to acknowledge that Regensburg may be considered a pioneer in terms of its management strategy and approach to heritage thinking. Prior to the establishment of conventional criteria, Regensburg developed its own management plan, which was subsequently adopted as part of the EU-funded project “HerO - Heritage as Opportunity”, to oversee the inscription. Regensburg endeavoured to take a more tolerant approach towards history from the beginning. Not only is it necessary to safeguard the inscribed site, but it is also imperative to ensure its sustainable development. This is why a collaborative effort including individuals from diverse backgrounds, including public officials and outsiders, was required (UNESCO, 2012).

The management plan for Regensburg highlights the current challenges faced by historic cities, such as urban pressure, shifting demographics, and global climate change. Therefore, the aspects that I have already discussed in the literature overview. However, it is crucial to analyse the resemblances and disparities among the management strategies of the three case studies. Regensburg’s management plan states that World Heritage sites are confronted with the following challenges:

- I. Preservation of cultural heritage and maintaining aesthetic integrity
- II. The accurate and proper handling of environmental threats and natural hazards.

As a first observation, I could state that the parameter (I) of the city’s heritage management plan, aligned with the problematic narrative of the UNESCO status towards climate governance. Natural

hazards and environmental problems hold a unique significance compared to other risks outlined in the management plan, such as conflicting interests or conflicts of interest.

Considering that my three case studies are all surrounded by bodies of water (something which I also examine in the case of Bamberg), flooding poses a shared risk to them. The old town of Regensburg is prone to periodic floods due to its location on the banks of the Danube and Regen rivers. Since 2000, the Free State of Bavaria and the city of Regensburg have been collaborating on the development of a flood protection system for Regensburg (UNESCO World Heritage Centre, no date b; UNESCO, 2012).

The management plan has also addressed the issue of global climate change. According to the management plan, the primary challenges confronting society and politics in the twenty-first century are climate protection and climate change adaptation. The old town of Regensburg, together with Stadtamhof, is confronted with a substantial task of adapting to the impacts of climate change, commonly referred to as “Anpassung an den Klimawandel”. The World Heritage asset's distinctive features, including its historical architecture, safeguarded historical structures and monuments, and dense urban development, impose significant constraints on implementing structural measures for climate adaptation and conservation (UNESCO, 2012).

Regensburg has also participated in the research programme “Experimenteller Wohnungs- und Städtebau” (Ex-WoSt - Experimental Residential and Municipal Building Construction), led by the Federal Ministry for Transport, Building and Urban Development (BMVBS). The aim was to develop strategies and measures that are in line with the requirements of the World Heritage site. “Urbane Strategien zum Klimawandel-Kommunale Strategien und Potenziale” refers to one of the primary study focuses, which explores urban strategies for addressing climate change and the potential of municipal strategies. The objective of this study was to determine the specific impact of the greenhouse effect on the Regensburg World Heritage site. This encompasses the expected implementation of appropriate design typologies and principles pertaining to climate adaptation for outdoor and green areas (UNESCO World Heritage Centre, no date b; UNESCO, 2012).

A unique characteristic of the management plan is that it incorporated mentions of “climate change adaptation” since 2013. The objective of this study effort at that time was to address the following inquiries: how can a microclimate be created in the old town to guarantee secure living and working

conditions? What measures may be implemented to adapt the World Heritage property to mitigate the impacts of climate change? These objectives align with the humanistic approach that I have already mentioned.

Furthermore, Regensburg, as a member of the Organisation of World Heritage Cities (OWHC), underscored the implementation of energy-efficient methods and renewable energies in their 2019 publication. This publication underlined the correlation between environmentally sustainable policies and the protection of cultural property. Implementing adaptive energy management solutions that preserve the requisite validity and integrity for UNESCO World Heritage city status is a challenging task.

The process of improving energy efficiency in old structures through the use of compatible materials poses challenges for urban redevelopment, and these changes often come with high costs. Due to restrictions on the utilisation of solar energy and traditional insulation methods, there is a need for inventive approaches in civil engineering, material technology, and conservation. The Deutsche Stiftung Denkmalschutz and the Deutsche Fachwerkzentrum Quedlinburg have made significant contributions to the research and demonstration of ecologically sustainable restoration of historical monuments (Göttler, Rip, and OWHC Northwest Europe and North America, 2020).

Smith and Ripp (2020) proposed the incorporation of sustainable development and climate change into the city's World Heritage management plan. Recognising climate change as a substantial peril, they emphasise the susceptibility of UNESCO World Heritage cities due to their intricate and compact infrastructures, which can impact the city's crucial urban framework, local populations, and operations.

Contrary to the notion that urban heritage is immutable and unchangeable, Ripp and Lukat (2017) argue that World Heritage Urban Environments may serve as a framework for adapting to change. They suggest that in order to maintain their UNESCO designation, cities like Regensburg, - and I also add - Lübeck and Bamberg, should develop distinctive initiatives. Utilising energy-efficient construction materials is a method to decrease carbon dioxide emissions while maintaining the integrity and uniqueness of a location. Nevertheless, in order to achieve significant enhancements in urban living conditions, it may be necessary to reassess the extent of greenery in historical urban districts and make concessions for the protection of historical monuments (Städtetag 2019).

Regensburg has demonstrated a clear and deliberate effort to address the impacts of climate change on cultural heritage and the accompanying risks since at least 2013. Moreover, the city qualifies for some of the characteristics that Haupt and Kern (2022); and Haupt, Kern and Irmisch noted (2022). That is to say, Regensburg has a young and growing population, the unemployment status is low, the economic situation of the city is within good standards, and there is progress and support towards climate actions (Latinos, 2024).

4.3 Town of Bamberg

Bamberg is located in the northern part of Bavaria, which is in the southern area of Germany. Featuring several well-preserved ecclesiastical and secular monuments from the mediaeval period, the town is organised into three distinct sections: the City on the Hills (Bergstadt), the Island District (Inselstadt), and the Market Gardeners' District (Gärtnerstadt). It serves as an excellent illustration of a central European town with an early mediaeval design. In 1007, Henry II, the Duke of Bavaria, designated Bamberg as the episcopal centre with the intention of transforming it into a “second Rome”. The interplay between agriculture, including vineyards and market gardens, and the urban distribution hub in the present town is particularly captivating, as noted by the UNESCO World Heritage Centre (no date).



Fig. 3: Town of Bamberg
Source: Konstantinos Chatziandreou (2023)

The town of Bamberg was included on the list in 1993 based on criteria (ii) and (iv). The inscription encompasses a total area of 142 hectares, in addition to a buffer zone spanning 444 hectares. According to UNESCO, the town of Bamberg is a notable illustration of an early mediaeval city in central Europe. Therefore, its inclusion is justified based on criteria (iv) and (ii) because of its well-preserved mediaeval and baroque layout and architecture. (UNESCO World Heritage Centre, no date e; UNESCO, 2019).

Due to the significant preservation of the three population sections comprising the city's plan, the World Heritage site fully meets all the criteria for possessing OUV. Furthermore, the street patterns of the three historic core sections still retain some features from the Middle Ages. These regions are abundant in genuine historic structures. Bamberg has been engaged in an ongoing initiative to restore historic properties and areas since the 1950s (UNESCO World Heritage Centre, no date e; UNESCO, 2019).

The town of Bamberg now has a population of around 80.000 citizens as of 2022. It is a city that has a significant cultural heritage. Furthermore, the old town functions as the headquarters of the archdiocese with the same name, a vibrant and constantly evolving economic centre, a prosperous metropolis with a university, and a key administrative site (UNESCO, 2019; Bamberg, 2022).

Multiple stakeholders are engaged in the conservation and safeguarding of the city's historical heritage. The updated management plan for the World Heritage site in 2019 highlights the continued protection provided by the laws and regulations of the Federal Republic of Germany and the Free State of Bavaria for the inscribed site. The legal framework that safeguards the World Heritage site and its surrounding territory is primarily established by the Bavarian Monument Protection Law and the Federal State of Bavaria's Regional Development Plan. Construction projects within the municipality adhere to both the Federal Building Code and the Bavarian Building Regulations (UNESCO, 2019).

The Preparatory Land Use Plan delineates the buffer zone, the World Heritage region, and the urban ensemble, which encompasses many historic structures and archaeological objects. The “Bamberg Model” of historic building conservation guides preservation activities in accordance with recognised requirements for monument protection (UNESCO, 2019).

The Bamberg World Heritage Office, located under the city administration's Division for Education, Culture, and Sport, serves as the central hub for coordinating matters pertaining to World Heritage. The Bavarian State Conservation Office, the local Building Office, the Economic Development Office, many educational and research organisations, and the BAMBERG Tourism & Congress Service are all closely affiliated with this office. The primary duty of this organisation is to oversee the implementation of the UNESCO World Heritage Convention at the local level. In addition to its primary responsibilities, the office also fosters connections with Bamberg's Intangible Cultural Heritage (UNESCO, 2019).

Bamberg, like several other World Heritage sites, encounters a distinct array of challenges. According to the management plan, the site that has been marked with an inscription is encountering difficulties due to urban growth, particularly in the inner city. Implementing proactive actions is essential due to the presence of 1340 protected structures, urban gardens, and the escalating impacts of urbanisation. Socioeconomic pressures provide a significant challenge, especially when it comes to the enduring intangible cultural tradition of urban gardening (UNESCO, 2019; Oevermann et al., 2022).

These challenges are exacerbated by tourism, especially during the summer when a substantial influx of visitors occurs. The influx of visitors places further strain on the city's infrastructure and resources (UNESCO, 2019; Oevermann et al., 2022).

The city's issues are worsened by its environmental susceptibilities; Bamberg's position across the Regnitz River and the Main-Danube Canal renders it very susceptible to floods, which is a significant concern. One more challenge is the fire risk due to the dense construction in the old town. This means that accidental fire incidents can be caused on the roofs of old buildings, and at the same time, fire can quickly spread in the city. The management plan provides just a small amount of information, indicating that climate change and its associated aspects have not been adequately investigated, despite the plan's substantial attempts to address this issue. There appears to be a lack of understanding about the lasting impacts of climate change on the World Heritage site of Bamberg and how to effectively tackle this issue (UNESCO, 2019).

Bamberg suggests through its heritage management plan some measures and recommendations regarding the old town and its heritage. More specifically, these suggestions concern the

architectural heritage and urban development of the town, its urban gardening, tourism and economy. In these recommendations, mostly tourism-related solutions can be spotted as well as urban gardening solutions. Regarding climate change and sustainability, there is a long-term plan to reduce the burden of public spaces caused by vehicles. It is also highlighted that in 2018 more than 100 trees were planted in order to make the city greener. Simultaneously, in my recent interaction with contact persons from Bamberg, it was made clear that a large number of trees are being cut each year to avoid cases of fire (Interview 8, 2023). In turn, there is a contradiction as it can be noticed. Moreover, the Climate and Energy Agency in Bamberg through its Agenda 21 bureau offers a free-of-charge advice service regarding topics of energy-saving building renovation throughout the city. It is also mentioned that the Municipal Utilities provides its customers with electricity from renewable energies, which is generated by hydropower; an essential detail that will be analysed in the upcoming analysis.

4.4 Conclusion

The management practices of the three case studies exhibit distinct disparities. Remarkably, the 2011 management plan of Lübeck did not succeed in addressing the significant risks associated with climate change. Hence, an update of the managed plan would be essential. The publication omits crucial details regarding the effective strategies to tackle the intricate challenges posed by climate change, instead focusing predominantly on issues such as noise pollution and vibrations. Curiously, the World Heritage Coordinator for 2021 outlined measures to reduce the impact of climate change and the risks associated with it.

Regensburg has a distinctive quality of being highly conscious and considerate of contemporary matters. The 2013 management plan of Regensburg adopts a proactive approach by addressing the potential risks posed by climate change and outlining methods for climate adaptation as well as the integration of cultural heritage into climate governance.

Conversely, the Bamberg management plan demonstrates effective collaboration and strong legal protections, however, it provides few details on the impacts of climate change. The document acknowledges the presence of problems such as over-tourism and urbanisation that have an influence on intangible cultural heritage. However, it noticeably lacks in providing detailed talks regarding climate change and its potential long-term consequences.

The comparative research in the context of heritage management plans highlights Regensburg's creative strategy for integrating climate change factors into heritage management. It also mentions the integration of cultural heritage into climate governance; a fact that is essential. It emphasises the need to incorporate the risks presented by climate change and adaptation measures into heritage site management plans that are more comprehensive and clear. It is imperative to acknowledge and address climate change as the global environment undergoes transformations, in order to effectively safeguard our invaluable cultural heritage in a sustainable manner.

In the following chapter, I turn my attention to a detailed examination of the climate policies of each case study: Lübeck, Regensburg, and Bamberg. My focus is twofold - first, to analyse the main climate policies that each city has and second to investigate whether cultural heritage is seamlessly integrated into the climate policies of these World Heritage cities, and if so, to unravel the intricate

ways in which this integration unfolds. Through a comparative analysis, I aim to accentuate the nuances of cultural heritage's role within the broader context of climate governance and to answer the research question which is to investigate if the UNESCO status affects climate governance in World Heritage cities. The qualitative findings from my in-depth exploration promise insights into the varied approaches and strategies adopted by each city, contributing to a comprehensive understanding of the intersection between cultural heritage and climate governance in World Heritage cities.

4.5 Climate Governance Insights in Lübeck

Given that the latest authoritative publication on climate protection in the first case study was published in 2023, it may initially appear that I am referring to a new and revised text, in comparison to the city's heritage management plan. Lübeck's climate strategy primarily aims to achieve the significant target of reducing greenhouse gas emissions. The city's administration aims to attain carbon neutrality by the year 2040 and reduce greenhouse gas emissions by 50% by 2030, a fact that the Climate Protection Department reconfirmed to me (Interview 1, 2023). According to the strategy plan, a total of 320 actions are necessary to achieve this objective. The master plan emphasises the need for collective effort and the integration of climate protection as a fundamental aspect. It highlights the need for solidarity and a sense of belonging. This fact underscores the importance of flexibility in the context of cultural heritage and climate governance, as exemplified (Masterplan Klimaschutz - Stadtentwicklung, no date).

Upon making the promise to reduce greenhouse gas emissions in 1990, the city demonstrated a clear understanding of the imperative to safeguard the environment. In 2019, all departments focused their attention on this problem. The city's strategy entails the simultaneous increase of renewable energy sources and the maintenance of fossil fuels, save for the establishment of greenhouse gas neutrality. The actions pertaining to climate protection are subdivided into many fields of action, encompassing energy and construction, transportation, resource conservation, soil and land utilisation, and economics. The strategies to enhance the efficiency of climate protection endeavours are detailed in a distinct systemic domain of activity. This exemplifies the proactive nature of Lübeck (Masterplan Klimaschutz - Stadtentwicklung, no date).

Furthermore, similar to the need for financial support in preserving and promoting history, addressing the issue of financing climate protection measures is a challenge that cannot be solely managed by the city. Consequently, the federal and state governments have an obligation to offer suitable avenues for local climate safeguards, as outlined in the master plan. Substantial investments in energy supply networks and infrastructure are necessary to save the planet. However, failing to take action at this moment will result in higher expenses in the future (Masterplan Klimaschutz - Stadtentwicklung, no date).

Significantly, the city became a member of the Climate Alliance of European Cities in 1993. Consequently, the city experienced a substantial decrease in carbon dioxide emissions. In 2010, the city council implemented a comprehensive climate protection strategy, marking the start of a new age of proactive measures. The inaugural office dedicated to the coordination of climate protection and adaptation was formed in 2011, precisely one year subsequent. The primary objective of climate protection is to restrict the release of greenhouse gases with the aim of alleviating the consequences of global warming and reducing the gravity of future climate-related challenges. In contrast, the objective of climate adaptation is to avoid harm and enhance the city's ability to withstand and recover from climate-related challenges, in order to maintain a good quality of life (Masterplan Klimaschutz - Stadtentwicklung, no date).

In my study on climate governance and cultural heritage, I have come across several situations that lack thorough and detailed analysis. In certain climate protection programmes, cultural heritage is not given priority (Fatoric and Egberts, 2020; Kern et al., 2021). Indeed, it is a widely applicable observation that there is a significant absence of climate governance and heritage in many contexts, as shown by my previous findings (Masterplan Klimaschutz - Stadtentwicklung, no date).

Conversely, Lübeck presents an opposing viewpoint through its climate protection strategy. In addition, I examined the city's UNESCO management plan, which lacks crucial information, although it diverges in its strategy for climate protection. Put simply, I recognised that the city had a meticulously planned, documented, and up-to-date climate policy. Reading the blueprint will provide readers with profound knowledge (Masterplan Klimaschutz - Stadtentwicklung, no date).

The master plan delineates a comprehensive strategy for generating power inside the urban area by harnessing renewable energy sources, primarily through the installation of solar panels on rooftops. When contacting individuals from the Department of Climate Protection, it is advised that the Department collaborates to ensure the preservation of both the UNESCO World Heritage site and monument protection. Cultural heritage has been introduced for the first time in the Lübeck master plan. The Climate Department acknowledges the importance of cultural heritage and promotes collaboration among all stakeholders to implement crucial practices for climate preservation and adaptation (Masterplan Klimaschutz - Stadtentwicklung, no date).

As was explained by the Climate Protection Department (Interview 1, 2023), the western part of the city requires the installation of solar systems on rooftops. The Department is actively engaged in negotiations to not only promote the use of renewable energy but also ensure the preservation of the area's historic heritage. Thus far, this objective has not been accomplished due to the reluctance of the Monument Protection Department to permit any additional modifications, particularly on the rooftops. They argue that allowing people to stand on the hill or tower would compromise the authenticity of the historic setting. Consequently, the sight of the medieval city would be disrupted. As per my conversation with the Climate Protection Department (Interview 1, 2023), it is necessary to make political decisions due to the impact of the heritage designation on climate policies inside the inscribed site (Interview 10, 2023). The ongoing conversations between the two departments are challenging, as acknowledged, but there is a shared understanding. The main issue between the two departments seems to be mostly bureaucratic, as the Monument Protection Department possesses a comprehension of the idea and endeavours to provide guidance to the building administration in order to conserve energy. However, it should be noted that there are sometimes conflicts between the two entities. For instance, during the second interaction with the Climate Protection Department, they informed me that they were unable to link me with the Monument Preservation Department due to an ongoing conflict regarding the same topic as my research (Interview 2, 2023).

Germany seems to be falling behind in this aspect, whereas other countries such as France are more advanced (Interview 1, 2023; Interview 5, 2023; Interview 10, 2023; Latinos, 2024). Installing solar systems on cultural landmarks in Germany, especially Lübeck is deemed essential yet presents significant difficulties (Interview 1, 2023; Interview 10, 2023). This work necessitates obtaining the authorisation of the monument conservation authorities. Despite the complexity of solar systems in Lübeck, the city successfully collaborated with a select number of churches to implement photovoltaics as a pilot project on red roof tiles (Interview 1, 2023; Masterplan Klimaschutz - Stadtentwicklung, no date). In addition, the city must establish a registration process for possible roof greening, which must also incorporate the World Heritage site of the city (Interview 1, 2023). This requirement has caused frustration within the Monument Protection Department. For example, if there is a little amount of vegetation on the roof of a church or if the roof receives a significant amount of sunlight, this would be a concern. Therefore, the Climate Protection Department should seek guidance from the latter in order to address this issue.

Lübeck is also susceptible to excessive rainfall and any potential dangers that arise from the sea, such as floods. Hence, the Climate Protection Department aims to execute a project focused on road designs to mitigate the occurrence of street flooding, as elucidated by the Climate Protection Department (Interview 2, 2023). Furthermore, the endeavour to cultivate trees within the historic city has been unsuccessful due to opposition from the Monument Department. Traditionally, it was not customary to have trees or any other type of greenery inside the designated area of Lübeck since it has always been a city made of stone. However, in light of the need to adapt to climate change, it is now considered unfavourable to refrain from taking such steps. The act of planting trees is a subject of discussion and disagreement among the city's governing body (Interview 2, 2023).

It is important to highlight that during my discussion with the Monument Protection Department in Lübeck on climate governance and heritage sites, the Department recognised the intricate nature of the subject. They highlighted (Interview 3, 2023) that climate governance strategies and monument preservation are still in the early phases of development. After two months though, the Department provided me with replies as they chose to address this matter following my encouragement. The Department has confirmed that they are currently working on this problem in Lübeck. According to stakeholders from the Department, it has been established that climate change is having considerable effects on the city's historical architecture and cultural heritage monuments. These consequences are attributed to regular weather phenomena such as heat, floods, and drought. Both the architectural and garden monuments are impacted by this. Moreover, the integrity of the monument material is in jeopardy and can only be modified to a restricted degree from a structural perspective. The department has identified two challenges in monument preservation related to changing climate conditions. Firstly, there are political demands that conflict with the available options for listed buildings, such as the use of photovoltaics. Secondly, there are requirements for energy-efficient refurbishment of listed buildings (Interview 4, 2024).

Simultaneously, they emphasised the necessity of formulating criteria based on the Monument Protection Act to include heritage in climate initiatives. Following my comprehensive investigation conducted inside the Department, it has been asserted that the safeguarding of cultural heritage is not just a cultural objective but also a political one. It has been identified that there is a pressing need for a law to be prioritised over technical advancements, as the existing legislation does not provide provisions for monuments. Furthermore, they emphasised the need to ensure equal interest in legislation and equitable tax treatment for owners of monuments who choose district solutions

involving photovoltaics, heat pumps, or wind turbines. Finally, the Department informed us that the World Heritage inscription of Lübeck is seen as a hindrance to achieving climate governance objectives (Interview 4, 2024).

Given my focus on old mediaeval cities, their cultural heritage, and their environmental approaches, it is logical that the latter should be executed by means of architectural structures, regardless of their historical significance. For instance, it is clear from the master strategy that it is vital to address the heat hazard in some areas of the city, and that transitioning to electricity is crucial in doing so. Hence, it is essential to establish new positions in building management and energy management, while the conservation of antiquities remains of utmost importance. Indeed, a substantial proportion of the city's historical buildings require refurbishments to enhance their energy efficiency, in accordance with climate protection rules. Therefore, the Climate Department aims to enhance the pace of rehabilitation by 2030 (Masterplan Klimaschutz - Stadtentwicklung, no date).

In addition to the standards for the inscribed city, which is a UNESCO site, there are specific guidelines for the rehabilitation and refurbishment of listed structures. Resident homeowners of listed buildings will receive specific instructions on how to renovate their properties in order to enhance their energy efficiency. Furthermore, there are opportunities for them to acquire knowledge regarding finance and legal prerequisites (Masterplan Klimaschutz - Stadtentwicklung, no date).

To mitigate potential risks such as the deterioration of architectural elements in historic buildings or the potential loss of their World Heritage status, it is imperative that the department emphasises the importance of treating these structures in a manner that aligns with their designated status throughout renovation. Losing the inscription is a challenging task, particularly when it occurs under stringent statutory guidelines and meticulous planning (Interview 2, 2023). This fact is also recognised in the city's climate policy, and it is appropriate to highlight that this is a positive aspect that reinforces our assertion of adaptability. As I further examine the data from different sources, it will become evident that further efforts are required to enhance the adaptability and understandability of climate governance and cultural heritage (Masterplan Klimaschutz - Stadtentwicklung, no date). Furthermore, I emphasised from the beginning of my research that I adopt a human-centric viewpoint towards heritage, which entails the need for flexibility, thoughtfulness, and proactive measures to establish durable urban prospects.

Heat is also a recurring issue in the medieval city, as previously stated. The state has allocated cash for the city's heat planning project, but, it is inadequate to effectively address the complex work of heat planning for the old town as well. In accordance with the climate plan, special attention must be given to the old town, which holds historical significance, in order to provide a heat supply that is completely free of greenhouse gas emissions. Hence, the Climate Department advises the establishment of a dedicated task force of urban planners, climate liaisons, and specialists in monument conservation (Interview 1, 2023; Masterplan Klimaschutz - Stadtentwicklung, no date).

As was emphasised by the Climate Protection Department in the interviews the latter is a separate concern. There seems to be a perpetual conflict between the Climate and Monument Department in the city. The Climate Department aims to provide renewable heating throughout the old city, however, the Monument Protection Department opposes this initiative, despite their endorsement of street heating (Interview 1, 2023; Interview 2, 2023).

Ultimately, the intricacy I previously mentioned becomes evident when I seek information on the city's policy on climate protection and cultural heritage. To clarify, several aged structures are used for residential purposes, and the majority of their owners (already indicated) require specific instructions when they intend to make alterations or adopt climate preservation measures, such as transforming an old building into a state of climate neutrality. They commonly inquire about the water and soil prerequisites for their properties, measures for noise prevention, zoning restrictions, municipal heat planning, insulation for heating systems, and preservation of monuments as per the plan. The primary issue lies in the fact that, as highlighted by the climate protection strategy, information is occasionally presented with conflicting guidance as a result of the divergent viewpoints of the departments disseminating it (Interview 1, 2023; Interview 2, 2023; Masterplan Klimaschutz - Stadtentwicklung, no date).

4.6 Conclusion

Consequently, the analysis of Lübeck as a case study sheds light on the complex interplay between climate policy and cultural heritage in the specific setting of this renowned city. Lübeck distinguishes itself by its proactive stance on climate preservation, as detailed in its master plan. This strategy showcases a dedication to diminishing greenhouse gas emissions, all while taking into account the distinctive obstacles presented by its UNESCO World Heritage site.

This case explores the intricacies of talks and confrontations between the climate and monument preservation departments, uncovering the bureaucratic obstacles and divergent viewpoints that influence the process of decision-making. The complexities associated with the installation of solar systems, opposition to tree planting, and discussions surrounding climate adaptation measures highlight the intricate equilibrium needed to safeguard cultural heritage while successfully addressing climate change.

The case study emphasises Lübeck's acknowledgement of the necessity for cooperation among many stakeholders, including urban planners, climate scientists, and monument preservation specialists. The continual discussions and conflicts highlight the changing process of incorporating climate factors into historic preservation endeavours.

The research recognises Germany's relative delay in putting solar systems on cultural sites compared to other countries but also highlights Lübeck's capacity for discovering inventive solutions. The demand for flexibility, adaptability, and a human-centred orientation is in line with the overarching objective of establishing resilient urban futures.

Essentially, Lübeck provides a powerful example that demonstrates the difficulties, disputes, and possibilities involved in harmonising climate governance with the preservation of cultural heritage. The city's experiences provide useful lessons for other historic areas dealing with comparable challenges, highlighting the importance of employing innovative methods and cooperative tactics to ensure a sustainable and resilient future.

4.7 Climate Resilience Insights - Regensburg

At the outset of my research, I posited that Regensburg had the potential to be regarded as the pioneer among my three selected case studies. The latter will become more obvious after analysing the third case study as well. This statement was also accentuated by the recent interview with the Head of Resilience and Climate Adaptation of ICLEI - Europe, Latinos (2024). He noted the fact that in Regensburg - since they have collaborated - they are really putting a lot of effort into fighting climate change and becoming resilient. Regensburg shares identical special qualifications that have also been analysed by Haupt and Kern (2022) in relation to the city of Remscheid. Regensburg has been addressing climate change earlier than Lübeck and Bamberg, although it is not widely recognised for its efforts. The city's administration is presently revising the official policy paper on climate protection. However, there is still a substantial amount of information, including interviews, that can provide us with insights and allow me to assess the climate governance situation in Regensburg and its connection to cultural heritage (Stadt Regensburg - Energie und Klima - Klimaresilienz, no date).

It is noteworthy that in the city of Regensburg, they possess the understanding and discernment to distinguish between climate protection and resilience. Resilience is really important due to the fact that it gives the ability to react and adapt to unforeseen challenges. However, a significant challenge with resilience is that many people are not entirely clear on its definition or how to implement it effectively. Moreover, resilience, particularly when considering cultural heritage as a system, necessitates starting with oneself. It requires self-awareness and personal commitment (Gustafsson and Ripp, 2023; Stadt Regensburg - Energie und Klima - Klimaresilienz, no date; Interview 5, 2023).

The latter is confirmed through the resilience plan of Regensburg. The city asserts that climate protection entails the reduction of CO₂ or the mitigation of its emissions worldwide through various initiatives, such as promoting the use of bicycles over vehicles. Additionally, resilience is seen as the means to combat climate change and adapt to its effects (Stadt Regensburg - Energie und Klima - Klimaresilienz, no date). Nevertheless, Regensburg has not implemented any climate-resilient practices (Interview 5, 2023). However, there is a proactive proposal to tackle this issue before it gets excessively urgent. The proposal recommends commencing a feasibility analysis and including preservation experts in determining the practical and essential measures for enhancing climate

resilience inside the city (Stadt Regensburg - Energie und Klima - Klimaresilienz, no date; Interview 5, 2023).

The resilience strategy indicates that adapting to climate change presents both new difficulties and possibilities to enhance current features. The local government's aims are to enhance the city's green infrastructure, including green roofs and facades, as part of its resilience strategy. This initiative is intended to mitigate the negative effects of urbanisation, improve the overall quality of life, and enhance the aesthetic appeal of the cityscape (Stadt Regensburg - Energie und Klima - Klimaresilienz, no date). Furthermore, the implementation of climate change adaptation measures is starting to impact choices related to the choice and upkeep of trees, as well as the conservation of historical parks and gardens. Regensburg is presently facing a crucial point when it is working hard to incorporate climate change solutions into its operations. The city acknowledges the significance of sustainability and resilience in its growth (Interview 5, 2023; Latinos, 2024). Indeed, the administration has been actively addressing climate change concerns for several years, resulting in the implementation of numerous projects. One example is the research project ExWost - to which I also referred in the analysis of the city's heritage management plan - which focused on experimental housing and urban development. As part of this project, measures were devised to adapt the old town to the climate. Additionally, a climate study was conducted to identify the regions impacted by heat and ventilation (Stadt Regensburg - Energie und Klima - Klimaresilienz, no date).

Also, the resilience plan explicitly states the need to create specific strategies for climate adaptation and energy efficiency, with a particular focus on the World Heritage area. The criteria of monument and global heritage preservation continually limit the possible approaches and measures. This is an ongoing evaluation process that requires the identification of solutions. Given the reality of climate change and the shift towards renewable energy, there will be a growing urgency to take action. It is likely that, when faced with uncertainty, decisions will need to prioritise climate protection. For instance, the densely populated old town area is expected to experience significant heat stress in the future (Stadt Regensburg - Energie und Klima - Klimaresilienz, no date; Interview 5, 2023). The resilience strategy for Regensburg includes a provision to implement energy optimisation methods. Additionally, it emphasises the need to find solutions that protect the cultural property of the designated individual World Heritage buildings in the Old Town (Stadt Regensburg - Stadtentwicklung - Stadtentwicklungsplan, no date).

It is worth mentioning that back in 2017, the government included the 9th principle in the energy and climate model. This concept focused on climate adaptation, preservation of architectural heritage, and maintaining a good quality of life. Urban planning and development in the city of Regensburg centred around this particular aspect. Since 2017, the city of Regensburg has made attempts to implement climate governance and preserve cultural heritage. However, there is still a lack of complete integration of climate change into heritage preservation (Stadt Regensburg - Stadtentwicklung - Stadtentwicklungsplan, no date; Interview 5, 2023; Interview 6, 2023).

As it was admitted in one of my recent conversations (Interview 5, 2023; Interview 10, 2023), the integration of climate change in Regensburg occurs through the implementation of certain initiatives. Specifically, in the historical sector, when certain districts of the old town are being renovated or restored, there is a deliberate attempt to include climate change concerns in these activities. Specifically, focus is placed on factors such as ensuring accessibility to potable water sources, establishing green parks or green areas, and mitigating the impacts of urban heat islands. The process of integration is slow and involves meticulous preparation. This strategy functions as a means to incentivise preservationists to actively engage in conversations and decision-making processes pertaining to climate change adaptation. There is a common belief that historical preservation is typically limited to structures located outside of the historic region. Nevertheless, it is crucial to question this perspective and acknowledge that cultural heritage must be incorporated into climate governance endeavours, especially within places of historical significance. The proactive approach seeks to close the divide and advance a more comprehensive plan for tackling the effects of climate change on the protection of heritage (Interview 5, 2023).

It is worth noting, that the local government made the decision to address the adverse effects of climate change on the urban environment to ensure that future generations may successfully adjust and reside in that area. The climate resilience management plan was produced in November 2018 in partnership with many stakeholders and community people, as a result of this factor. Community interaction is essential for the climate adaptation plan in Regensburg. The city possesses a strong and extensive network of non-governmental organisations (NGOs) that are actively promoting and urging the government to take action in order to tackle climate-related problems. An area of significant strain is the matter of automobile utilisation, which overlaps with climate change, sustainability, and mobility problems. It is also important to acknowledge that there is substantial

backing for automobiles, notably from key individuals and organisations like the BMW plant (Interview 5, 2023).

However, there is also an increasing movement among the majority of citizens who are lobbying for environmentally friendly alternatives. These grassroots activities are crucial for increasing awareness about the necessity for change and applying pressure on policymakers to prioritise sustainability and climate adaptation. Despite persisting obstacles, the proactive engagement of NGOs and conscientious individuals displays a dedication to tackling climate-related concerns and working towards a future in Regensburg that is both sustainable and resilient (Interview 5, 2023; Interview 6, 2023).

Additionally, it is noteworthy that climate change units have recently been included in many sectors in Regensburg, as I consulted with diverse stakeholders on the matter. These units convene stakeholders from several sectors to engage in talks around methods for adapting to climate change (Interview 5, 2023; Interview 6, 2023). Based on this principle, participants go back to their respective sectors to put into action the tactics that have been presented.

Nevertheless, it appears that the Monument Protection Department frequently lacks a comparable cooperative methodology, as highlighted in my recent discussions (Interview 5, 2023; Interview 6, 2023; Interview 10, 2023). This occurs due to the frequent occurrence of divergent methods and agendas across various areas and preservationists in the realm of heritage preservation. While certain individuals may prioritise the preservation of physical artefacts, others acknowledge the significance of safeguarding intangible heritage and the dynamic cultural practices that are equally essential in comprehending our shared history. The area is always changing and developing as we acquire a more profound comprehension of the concept of heritage and the most effective methods to protect it for future generations. In Germany, the preservation of heritage is held in high esteem and is sometimes linked to opposition against alteration or progress (Interview 5, 2023; Interview 10, 2023).

Although I already touched upon some of the risks that the designated site in Regensburg is exposed to when I briefly examined the management plan, it is necessary to further explore this issue, since these challenges give birth to certain regulations.

Statistics indicate that Regensburg saw one of the hottest summers on record in 2018, with temperatures reaching a top of nearly 39 degrees. Thus, heat might be seen as a key concern associated with climate change. As a result of escalating global warming, urban surfaces are experiencing elevated temperatures, with minimal nighttime cooling during extended heatwaves. This phenomenon is particularly evident in exposed areas inside the historic district, where there are no provisions for shade and only a limited amount of vegetation (Stadt Regensburg - Energie und Klima - Klimaresilienz, no date; Interview 5, 2023; Interview 6, 2023).

Exactly the same crucial issue was underlined in my conversation with a member of the Green Party as well as a member of the city's council in Regensburg (Interview 6, 2023). The city centre of Regensburg experiences an intense amount of heat, particularly in its central area. Within the city, there is a plaza located in the heart of the old town that becomes very hot during the summer, reaching temperatures that are 2 degrees higher than any other location in the city. There are no green or blue infrastructures present, with just stone being the predominant material. As we can see, there are some parallels between Lübeck and Bamberg. This issue is of significant magnitude and has undergone numerous assessments, during which certain individuals were queried about climate adaptation and heat management. Particularly, the elderly demographic expressed their reluctance to visit the city centre during the summer due to the absence of shade and seating options (Interview 5, 2023; Interview 6, 2023). Hence, the high temperatures in Regensburg are a significant issue, since it holds the record for the most number of hot days among all cities in Bavaria. This heat-related problem occurs in the old city core, where the scarcity of trees intensifies the impact of the heat (Interview 5, 2023; Interview 6, 2023).

This issue has been also highlighted by the World Heritage Office in Regensburg, which has been actively and persistently working on resolving the problem of excessive heat in the city for more than ten years (Interview 5, 2023). Extensive studies have been conducted to comprehend the origins of fresh air, resulting in the identification of particular roadways that must be kept clear. By doing this, they have acquired vital knowledge in addressing heat-related difficulties. Shade, trees, and water have been identified as essential components for reducing heat in metropolitan environments, among the techniques under consideration. Although the planting of trees and the incorporation of water features show great potential for cooling the climate and enhancing urban resilience, their execution is sometimes hindered by impediments that impede development. During these endeavours, it has been discovered that implementing change may be arduous, since several

stakeholders may possess contrasting perspectives, as previously stated. Fostering productive discourse and cooperation among diverse factions, such as community members, conservationists, municipal authorities, and urban strategists, is crucial for effectively negotiating these intricacies. Addressing concerns and fostering consensus is essential in order to overcome opposition to change. Emphasising the multitude of advantages linked to these approaches, such as higher well-being, less heat-related strain, and improved urban aesthetics, might generate increased backing for their execution. In addition, the expeditious adoption of these methods may be facilitated by researching inventive solutions and forging relationships with organisations that specialise in urban sustainability and climate resilience. Despite the slow pace, the dedication to improving the urban landscape of Regensburg is unwavering (Interview 5, 2023; Interview 6, 2023).

The efforts to address these difficulties were also mentioned in the recent interviews. While several projects have been successfully executed, it has been observed that more simple alternatives such as introducing trees in the city centre are very challenging due to multiple factors, including concerns about the visual impact from the exterior and the need to preserve historic structures without obstruction. Ultimately, alternative methods for bestowing shadows upon individuals should be considered (Interview 5, 2023; Interview 6, 2023).

The city is further impacted by a succession of other climate change phenomena, such as intense precipitation. Anticipate more precipitation, particularly during the winter season, with a greater intensity and duration. The difficulty is in accurately forecasting heavy rainfalls, as they tend to manifest unpredictably and in very localised regions. Due to the inadequate construction of the sewage system and the saturated ground, the water is not absorbed and instead pours over the surface, leading to significant structural damage (Stadt Regensburg - Energie und Klima - Klimaresilienz, no date). This has been reaffirmed during my recent meetings with the World Heritage Office. According to their observations, the UNESCO Site is exposed to significant threats such as intense but brief rainfall, extended periods of high temperatures, and flooding. Furthermore, the city is facing a rising frequency of droughts as a result of unequal distribution of rainfall throughout the year (Interview 5, 2023; Interview 6, 2023). Another challenge that the city is encountering is ventilation, which pertains to the process of thermal equilibrium between regions with varying temperatures. The impact might be further intensified by the physical features of the landscape, such as the Danube Valley. Given that the rural regions around the city, which consist of agricultural and forested areas, are cooler than the urban heat island, it is crucial to provide proper

ventilation in the city to facilitate the dissipation of hot air (Stadt Regensburg - Energie und Klima - Klimaresilienz, no date).

Notwithstanding these climate-related difficulties, the characteristics of heritage in Regensburg are mostly unaltered (Interview 5, 2023). It is crucial to acknowledge that immediate action is necessary since these characteristics are in danger of being affected in the near future within the designated area. When considering the impact on heritage, it is essential to go into comprehension of heritage itself. If we define cultural heritage exclusively as tangible structures, then the response might be “no”, as buildings may endure without damage. Nevertheless, it is crucial to take into account a broader and more inclusive viewpoint. Cultural heritage encompasses a dynamic system comprising not just physical things but also the people related to them, the methods in which they are exploited, and the intrinsic values they symbolise. Heritage is a complicated and sophisticated system that is prone to change (Interview 5, 2023). This is consistent with my initial standpoint, as expressed at the outset of this study, that heritage should be investigated from a human-centric perspective (De Waal et al., 2022).

Over the course of several years, the level of concern over climate governance and cultural heritage has intensified rather than leading to a resolution or consensus. In 2023, there has been extensive discourse over the use of photovoltaic systems on rooftops. The official policy stipulates that solar systems may only be erected inside the designated UNESCO region under specific circumstances, and if these conditions are met, an extra subsidy will be provided. Regensburg now lacks a substantial emphasis on climate adaptation in relation to cultural heritage, as was highlighted in my recent discussions (Interview 5, 2023; Interview 6, 2023). The separation between climate adaptation and heritage preservation arises from the historical practice of both sectors operating separately, with few attempts to incorporate climate issues into cultural preservation.

The absence of climate adaptation planning for heritage may also stem from political exigency to expedite plan development, perhaps resulting in oversight in integrating heritage-related components. This message has been reaffirmed to me (Interview 6, 2023). The ruling party authorised the installation of solar panels, which was previously not allowed. However, they did so without proper planning or consideration. Hence, the practical application of solar panels is not feasible. Based on remarks, half of the applicants are approved to install them while the other half are not. The visibility of solar systems when strolling in the city core is contingent upon many

factors. Consequently, many experience confusion and feelings of being overwhelmed when their applications are refused due to a lack of understanding surrounding the installation of solar panels. Hence, the necessity for exemplary policy instances arises, since the government facilitated its implementation without formulating a comprehensive framework or providing any guidance. Furthermore, the administration failed to educate its personnel on this matter, leaving them ill-equipped to handle it (Interview 6, 2023).

The current predicament has given rise to difficulties within the city as the governing public parties failed to adequately anticipate this conceptual shift. Consequently, a faction of traditional town custodians launched a campaign, featuring an image on a flyer depicting the cathedral obstructed by solar panels (Interview 6, 2023). Moreover, the opposition from preservationists, namely about the use of solar panels on historical structures, has been a substantial obstacle. The Monument Protection Department's resistance to adopting this adjustment and their explicit objections to it are apparent. Although rules explicitly state that solar panels do not do any damage to heritage, preservationists persist in their unwavering resistance. Indeed, some medieval structures have successfully undergone adaptations to accommodate various changes over their existence, such as the integration of electricity and modernised water systems. Therefore, the incorporation of solar panels on rooftops should not provide a significant obstacle (Interview 5, 2023; Interview 6, 2023).

It is also worth mentioning the aims of Plan 2040 are established by Regensburg (Stadt Regensburg, n.d.):

- I. Climate neutrality of the entire city by 2035
- II. Manage growth in a climate-friendly and efficient manner
- III. Existing neighbourhoods and new development areas are climate-friendly and renovated in a friendly and energy-efficient manner or design
- IV. Urban development integration of measures and climate protection and climate adaptation
- V. Consistent switch to renewable energies
- VI. Create framework conditions for innovative projects
- VII. Use renewable building materials
- VIII. Actively counteract the consequences of climate change
- IX. Climate adaptation in the old town is to be implemented only under consideration. This concerns the Monument Protection Department**

According to the last parameter (IX), it is obvious that it is more than difficult for climate governance policies to be implemented within the World Heritage area of Regensburg. Moreover, the role of the Monument Protection Department is indicated regarding climate adaptation practices in Regensburg.

Consequently, addressing this division and fostering dialogue between climate adaptation efforts and heritage preservation is essential for developing comprehensive and sustainable strategies that balance the preservation of cultural heritage with the need for climate governance policies.

4.8 Conclusion

To summarise, my thorough investigation of Regensburg's climate governance circumstances and its delicate connection with cultural heritage uncovers a multifaceted fabric of difficulties and possibilities. The city, widely regarded as a pioneer in tackling climate-related concerns, exhibits a commendable understanding of the difference between climate protection and resilience. Nevertheless, as I go into my investigation, it becomes evident that although the city is proactive in acknowledging the difficulties presented by climate change, the implementation of this understanding into tangible, climate-resilient policies encounters impediments.

An important problem is maintaining a delicate equilibrium between climate adaptation and cultural preservation. The UNESCO World Heritage designation, which Regensburg takes pleasure in, introduces an extra level of intricacy. The rigorous regulations established by the Monument Protection Department, with the objective of safeguarding the genuineness of the environment, impede the adoption of environmentally sustainable initiatives like solar panels and tree planting in the historical centre of the city. The hesitancy to adopt renewable energy alternatives highlights the significant influence of heritage issues on climate governance.

The resilience plan of Regensburg recognises the emerging problems posed by climate change and offers a chance to augment the city's vegetation, minimise surface sealing, and increase the overall quality of life. Nonetheless, the incorporation of climate change methods into decision-making processes concerning trees, parks, and historic structures requires careful deliberation of the demands for monument and global heritage preservation. The city is currently at a critical point when it is working hard to discover solutions that achieve a harmonious equilibrium between climate protection and the conservation of architectural history.

The participation of NGOs and concerned people in campaigning for sustainable alternatives is evident in talks with different stakeholders, such as city authorities, preservationists, and community members. Nevertheless, this involvement frequently exposes a dichotomy between climate adaptation and heritage preservation. The recent authorisation for solar panels, although a favourable measure, lacked a thorough framework, resulting in perplexity and opposition, notably from preservationists. It is clear that there is a requirement for conversation and collaboration

between these historically distinct sectors in order to formulate plans that align cultural preservation with climate resilience.

The climate-related issues encountered by Regensburg, ranging from scorching temperatures to torrential downpours, present hazards to the city's designated site. The imperative for action becomes apparent when we broaden our perspective on heritage, viewing it not just as physical edifices, but rather as a dynamic and diverse system closely intertwined with the community it caters to. The city's Plan 2040 sets forth ambitious objectives for achieving climate neutrality and promoting sustainable urban growth. However, there is a clear distinction between the efforts to adapt to climate change and the protection of cultural heritage.

As I deal with the intricacies of climate governance in Regensburg, it becomes evident that a change in perspective is crucial. Incorporating climatic issues into historical preservation necessitates the implementation of inventive strategies and thorough planning, as well as a collaborative endeavour to reconcile differing viewpoints within the community. Tackling the difficulties presented by climate change while safeguarding the abundant cultural heritage of Regensburg necessitates a cooperative and comprehensive strategy.

Amidst the evolving environmental conditions, the decisions taken at present will mould the destiny of the city and establish the inheritance bestowed onto future generations. The community's active engagement, along with well-considered policies that take into account both climate resilience and historical preservation, may lead to a more sustainable and resilient Regensburg. In the end, the task of managing climate and preserving heritage is a collective duty that necessitates a balanced combination of traditional and innovative approaches to address the difficulties of the 21st century.

4.9 Climate Adaptation Insights in the Old Town of Bamberg

The most recent climate adaptation strategy that Bamberg has, dates back to 2021, unlike Lübeck and Regensburg. The District of Bamberg, the Climate Alliance in Bamberg, and the City of Bamberg were key participants in the development of the city's climate plan.

The successful implementation of a specific plan for Bamberg's adaptation to climate change would require the collaboration of several specialists and local residents. Bamberg's approach to adaptation emphasises the need to involve and actively engage local stakeholders in addressing local concerns. Several efforts were required to disseminate this notion, such as conducting surveys, interviewing, organising seminars, and hosting public events. Furthermore, the involvement of many organisations, corporations, non-governmental organisations, municipal and regional governments, educational institutions, and local residents was necessary (Klimaanpassungskonzept - Klimaallianz Bamberg, 2021).

The notion of adaptation posits that climate change, stemming from anthropogenic activities, is one of the most significant political and socioeconomic challenges of the twenty-first century. Bamberg states that the administration formed a climate alliance in 2008, having deliberated on the potential dangers of climate change for almost a decade. The association focuses on the expansion of local heating and solar systems, as well as the renovation of buildings to enhance their energy efficiency. Bamberg was the recipient of the Bavarian Energy Prize for Climate Protection Management in 2016. Nevertheless, recognising the long-term nature of climate change and the need for resilience, the Climate Alliance took the initiative in 2019 to develop a comprehensive climate adaptation framework. This framework incorporated innovative local strategies to effectively address the phenomena (Klimaanpassungskonzept - Klimaallianz Bamberg, 2021).

The notion of adaptation posits that the multiple conversion zones in Bamberg are an indirect consequence of its enduring impacts, which continue to be experienced in the present day. It is important to consider that in 2020, 10% of Bamberg's population was aged 80 or older. Nevertheless, as previously said, Bamberg is currently esteemed as a remarkable city with a rich historical background. The substantial influx of tourists is bolstering the economy's prosperity. Consequently, the city is also grappling with issues related to the overwhelming influx of tourists and the impact of climate change. In order to save this heritage, the city must confront the peril

presented by global warming. Historically, the city's proximity to the sea facilitated its prosperity. However, in contemporary times, Bamberg has developed a sense of apprehension towards natural calamities (Gunzelmann, 2009). Due to the changing climate in Upper Franconia, the city must take more measures to safeguard its residents, infrastructure, historical sites, natural surroundings, economy, and cultural heritage (Klimaanpassungskonzept - Klimaallianz Bamberg, 2021; Interview 8, 2023).

When exploring the topic of climate adaptation, it is crucial to remember that it is sometimes oversimplified by associating it solely with climate protection when phrases like climate policies are spoken. Climate policy is based on two separate and independent foundations. The first one pertains to safeguarding the climate, while the second one pertains to adjusting to it. These two factors are vital for the city of Bamberg and are incorporated into the climate policy. Consequently, Bamberg has chosen to take action and authorise the development of an adaption concept. The decision is both essential and justified due to the imperative to address climate change and its associated impacts in a distinct manner (Klimaanpassungskonzept - Klimaallianz Bamberg, 2021).

According to Bamberg's adaptation paradigm, global warming is identified as a significant threat. The summers in Bamberg and its environs are exceedingly hot. Specifically, between 1951 and 2019, there was a consistent yearly rise of 0.027 °C on average. From 1971 to 2000, the average temperature in the district was 8.3 °C, whereas in the city of Bamberg, it was slightly higher at 8.7 °C. During the same reference period, the district of Bamberg saw average temperatures that were somewhat higher than the national average of 7.8 °C (LfU Bayern, 2012). In 2018, the district saw its highest average annual temperature, as reported (Klimaanpassungskonzept - Klimaallianz Bamberg, 2021; Interview 8, 2023).

However, what are the consequences or repercussions of this situation? In Bamberg, the city is experiencing the effects of climate change and unusually high temperatures, which are resulting in specific repercussions. The notion of the city posits that several aspects of society, such as human health, energy use in buildings, and the urban living environment, are influenced by climate change (Klimaanpassungskonzept - Klimaallianz Bamberg, 2021).

Given those factors, it is clear that the district and city of Bamberg must enhance their ability to adapt. Various measures can be employed to develop the ability to adapt to climate change and so

minimise the potential negative consequences as much as possible. These measures encompass political mandates (such as those pertaining to store operating hours, designated heat-free days, or urban planning regulations) as well as operational strategies implemented by organisations and companies (such as modifying product offerings, optimising processes, or increasing stockpiles). Additionally, individual actions (such as modifying leisure activities, dietary choices, or vacation destinations) can also contribute to alleviating the impacts of climate change. The last instances illustrate that improved adaptive capacity may result from both autonomous, spontaneous adaptation and intentional, planned efforts by political actors (Klimaanpassungskonzept - Klimaallianz Bamberg, 2021).

Therefore, it is clear from Bamberg's climate adaptation concept that if there is significant climate change, the city's average temperature will increase significantly, especially in the summer. In addition, the occurrence of heat events will rise by a factor of four to five by the year 2100. Summertime precipitation is expected to see a little decline, while the probability of storms, hail, and intense rainfall will rise (Klimaanpassungskonzept - Klimaallianz Bamberg, 2021).

The urban configuration of Bamberg's old town enhances its prominent standing. The town has a predominantly uniform settlement pattern, together with a condensed and well-defined urban layout, especially in the World Heritage area. Bamberg's old streets and buildings comprise a collection of 4,500 separate structures, many of which have been officially recognised as individual monuments (Klimaanpassungskonzept - Klimaallianz Bamberg, 2021).

Bamberg was officially declared as a World Heritage Site in 1993, as previously mentioned. Despite extensive efforts to conserve it, the adaptation plan, which is the primary document on Bamberg's cultural heritage, acknowledges that its significance comes with environmental consequences. The old town has a substantial concentration of various activities such as residential, tourism, and commercial establishments. It is characterised by a historically evolved compact architectural layout, consisting of stone squares and narrow pathways. Public spaces lack vegetation. The summer months exert influence on all of these elements due to the elevated temperatures. According to the notion of adaptation, locations with high populations and development are susceptible to floods, whereas densely populated areas are inherently prone to severe weather conditions (Klimaanpassungskonzept - Klimaallianz Bamberg, 2021).

Bamberg's approach offers more insights into the correlation between cultural heritage and climate adaptation. For instance, the plan specifies that several variables influence the probability of a monument or building sustaining damage during severe weather occurrences. The Alliance considers the building's structural state, age, material, and usage, as well as its worth in terms of structural condition, building type, and insurance when assessing the possible level of damage. The concept of climate adaptation in these two scenarios considers the need to assess each building individually and exclude them from further technical evaluations.

Several cities have successfully implemented adaptive reuse approaches to mitigate climate change and capitalise on cultural property. Michiel van Balen's adaptive reuse projects in Belgium, such as Miss Miyagi, serve as a prime illustration (Interview 10, 2023). However, the adaptation notion suggests that this is not achievable in Bamberg. The old town is experiencing significant strain from the influx of tourists, and the limited availability of adaptive reuse methods is mostly attributed to the abundance of listed structures (Klimaanpassungskonzept - Klimaallianz Bamberg, 2021). An incontrovertible truth that ignites contentious debates within the urban community.

Another notable finding is that the notion of adaptation emphasises the challenge of integrating flood protection measures into the old town. This is due to the substantial amount of extra effort needed to adapt and preserve the old building materials. In addition, both the intangible cultural heritage of the gardener's district, which is part of the inscription and the tangible cultural heritage of Bamberg are at risk. Due to the city's extreme heat events, there is a possibility that the increasing temperatures will negatively impact the traditional cultivation of local vegetables. This may require the adoption of new, adapted techniques to replace outdated methods that may not be capable of addressing the new challenges (Klimaanpassungskonzept - Klimaallianz Bamberg, 2021; Interview 7, 2023).

There exists a notable deficiency in research due to the fact that there is still a considerable amount of work to be accomplished in the fields of climate governance and cultural heritage. The Bamberg adaptation idea stipulates the organisation of a roundtable discussion to address the legal and technical dimensions of climate adaptation and devise appropriate solutions. Improving the existing professional communication among the parties concerned is crucial. Currently, the city intends to implement several climate adaptation measures, including rainwater retention, energy efficiency, greening and shading of roofs and facades, utilisation of solar energy, and passive cooling. In

addition, the notion of adaptation suggests that the listed structures should conform to these adjustments (Klimaanpassungskonzept - Klimaallianz Bamberg, 2021).

Concerning the installation of solar panels on the rooftops of buildings inside the designated property of the city centre, it has been conveyed to me that this proposal has been rejected by the Monument Protection Department due to their belief that it would compromise the city's inscription status (Interview 7, 2023; Interview 9, 2023). Photovoltaic energy is a significant concern for residents in the heritage area of Bamberg. They are eager to participate in the transition to renewable energy and obtain more affordable energy without relying on fossil fuels or generating emissions. However, this goal is challenging due to the strict regulations in Bamberg, as highlighted in my recent discussions (Interview 9, 2023).

On the other hand, in the past 1-2 years, there has been a shift in mindset, leading to efforts to achieve certain aspirations. For example, the aim is to implement solar systems in a manner that is not visible to the public or that seamlessly integrates with historical structures, rather than using conventional photovoltaic systems (Interview 9, 2023). The goal is to achieve a compromise. However, this is subject to change in the future. In the upcoming year, the Bavarian Office will implement a new procedure to thoroughly examine the city and develop a comprehensive framework to identify and address these issues. In order to determine the feasibility of implementing a renewable transition in the designated city core; a thorough examination of particular features is necessary. However, the prevailing notion that solar panels are impracticable has also diverted attention away from other sections of the town where residents may install solar panels on their rooftops. Individuals residing outside the historic area have the belief that Bamberg does not require the installation of solar panels (Interview 9, 2023).

In addition, the same problem was also addressed in my recent conversations which aligns with the findings of the other two case studies, specifically on the act of tree planting (Interview 9, 2023; Interview 10, 2023). The majority of individuals in Bamberg express the necessity for an increased presence of trees inside the city centre due to the intense summer heat. However, when the administration attempts to plant large trees, the Monument Protection Department raises objections, since these trees would obstruct the aerial views of the historic city. Resistance has emerged against the planting of larger trees in the city centre of Bamberg due to concerns over the preservation of cultural heritage and the potential obstruction of views of historic buildings. This opposition was

reinforced during a recent meeting within the municipal administration when it was resolved that the inclusion of bigger trees in the city centre should be avoided (Interview 9, 2023).

While the city has formulated strategies to enhance climate resilience, no specific measures have been devised for the preservation of the heritage area due to the considerable challenges associated with their implementation. The region is characterised by its tiny dimensions and the presence of antiquated streets, buildings, and infrastructure, which renders any future development plans non-existent. There are concessions to be made between the Climate Protection Department and the Monument Protection Department, as they represent two opposing viewpoints. The question of whose side prevails is a constant topic of discussion (Interview 9, 2023).

Undoubtedly, climate adaptation is of utmost importance for the designated region of Bamberg due to its heightened temperature. Consequently, the incorporation of trees and water is imperative. However, any obvious alterations are consistently met with rejection or significant obstacles due to prevailing resistance. Implementing climate change adaptation measures in the heritage region is challenging, despite the fact that it is the place most in need of such measures. Thus, the poles encompass all these entities: parliament, municipal departments, local stakeholders, and individuals. While certain individuals strive for climate adaptation, the heritage community does not share the same objective (Interview 9, 2023).

Consequently, Bamberg lacks significant progress in terms of climate adaptation and historical preservation. It has a significant deficiency in terms of development. The city, however, needs climate adaptation measures, such as the installation of additional shading structures, to promote public health. The misconception that solar panels are unfeasible has also diverted the attention of residents in other parts of the town from installing solar panels on their rooftops. Individuals residing outside the historic area have the belief that Bamberg does not require the installation of solar panels. There are modest initiatives in the city core that contribute to the implementation of new measures for climate resilience, however, their impact is limited. For example, they propose the removal of automobiles from the city centre and the installation of large trees and fountains to restore the presence of water. However, the water supply is limited due to a lack of significant developments in recent decades (Interview 9, 2023).

In addition, no more details are provided about Bamberg's cultural heritage and climate governance. Furthermore, the adaptation plan briefly acknowledges the old town's inscribed status and cultural heritage but lacks in-depth discussion. The lack of involvement of the World Heritage Office in Bamberg as a partner or stakeholder in modifying its own recommendations and actions is clearly apparent. During my recent discussions (Interview 7, 2023; Interview 8, 2023), it became evident that the World Heritage Office lacks significant expertise in climate policies and cultural heritage. Their focus primarily lies on topics such as city tourism, which occasionally surpasses its capacity, and intangible practices related to urban gardening.

Simultaneously, during my conversation with the World Heritage Office in Bamberg, they suggested I communicate with the Monument Protection Department of the city since they are dealing with the topic I am investigating. When I sent an inquiry to the latter Department, they forwarded me to the World Heritage Office. Therefore, it seems that the city has a significant deficit in understanding climate governance and cultural heritage, and this can be considered problematic since the city has severe summer heat as well as high levels of humidity, which have not been properly investigated. Climate change impacts both the urban environment and the historic structures in the old town. The old gardens in the city are experiencing increased aridity, leading to the death of trees. Furthermore, it is not feasible to replace the original trees in these gardens. The city also has interior climatic hazards, mostly due to elevated humidity levels. Several verified fissures have manifested inside the aged structures. Furthermore, there are no explicit legislation or policies that may integrate climate policy with cultural heritage (Interview 8, 2023).

Bamberg is significantly endangered by global warming. According to Foken (2021), the average temperature in Germany has increased by 1.7 degrees since 2020, while in Bamberg it has climbed by two degrees during the past four decades. The urban heat island phenomenon has undeniably impacted old and historic cities, with its impacts being intensified by climate change and urbanisation due to the obstruction of cooling winds by buildings. The drought has resulted in the displacement of certain historic structures and the development of cracks in the baroque exteriors of other buildings. Given that the adaptation notion also encompasses it, this has a consequential effect on market gardens as well (Klimaanpassungskonzept - Klimaallianz Bamberg, 2021).

The implementation of energy transition was initiated to address this issue, and given Bamberg's membership in the Climate Alliance, it was also adopted. The rural regions in the vicinity generate

and provide the city with a reliable source of renewable energy, facilitating the development of new business models and fair division of profits among the municipalities. Bamberg's policy to address climate change, as stated by UNESCO, involves implementing measures to produce renewable energy. Furthermore, it should be noted that the recently adopted management plan in 2019, which incorporates important and essential directives, lacks substantial information on climate change, as previously highlighted (Klimaanpassungskonzept - Klimaallianz Bamberg, 2021).

However, Bamberg seems to have its own success story towards climate governance and cultural heritage. In 2018, Kraus Real Estate and Hydropower, a company based in Munich, collaborated with the architectural firm Rosenberg in Bamberg to establish a hydroelectric power generation system at the site of the former water mills. They also constructed a building to serve as a visitor centre for the World Heritage site, which includes catering facilities. To mitigate noise and vibrations, the fifteenth turbine is fully enclosed with rubber matting, which is both environmentally acceptable for fish and specifically developed for use in shallow river environments. This insulation serves to protect the building and the terrace located above it. Since its installation, the hydroelectric power plant has been supplying the local power system with electricity that is 100% environmentally friendly. The turbine's annual output of around 750,000 kWh, equivalent to the energy consumption of 300 homes, is remarkable given the waterfall's small height (UNESCO World Heritage Centre, no date c; Klimaanpassungskonzept - Klimaallianz Bamberg, 2021).

In order to avoid jeopardising the old town of Bamberg's OUV and other defining features, modern technology was employed in this project to harness the site's hydroelectric power, as renewable energy initiatives are not always sanctioned by the World Heritage Committee due to the risk of losing World Heritage status (UNESCO World Heritage Centre, no date c)

Hence, the UNESCO designation has an impact on climate policy in Bamberg, since it poses challenges to implementing activities within the existing status. Without this designation, the city would have had greater flexibility to undertake further initiatives. UNESCO must clearly express that implementing activities to enhance the coolness of cultural sites during summer, such as providing shade with trees, is both essential and important. These efforts should be implemented without jeopardising the preservation of the site's status (Interview 9, 2023).

4.10 Conclusion

The climate adaptation issues in Bamberg involve an intricate interaction between the preservation of cultural heritage and the implementation of efficient climate policy. Bamberg is confronted with substantial climate risks, such as escalating temperatures, occurrences of excessive heat, and detrimental effects on historical structures, gardens, and urban areas. The city's adaptation approach emphasises the necessity of a comprehensive strategy that takes into account both climate resilience and historical preservation.

Bamberg's adaptation strategy acknowledges the susceptibility of the old town, a UNESCO World Heritage site, to the impacts of climate change. The issues are exacerbated by the high concentration of historic structures, scarcity of green areas, and the impacts of urban heat islands. The adaptation notion underscores the significance of assessing each building on an individual basis, taking into account its structural integrity, age, composition, and cultural significance.

Nevertheless, the execution of climate adaptation strategies in Bamberg faces opposition and difficulties, particularly in the historic zone. The conflict between the climate department's aspirations for renewable energy, specifically photovoltaics, and the preservation department's apprehensions over the visual effects on the historic environment exemplifies a wider battle between climate adaptation and cultural protection.

The discussion around the placement of solar panels on rooftops, the planting of trees, and the execution of climate-resilient strategies highlights the challenges of reconciling climate objectives with the preservation of cultural property. The hesitancy to embrace apparent alterations in the heritage zone, motivated by apprehensions of jeopardising UNESCO recognition, impedes the advancement of successfully tackling climatic difficulties.

Bamberg faces the challenge of balancing the preservation of its cultural heritage with the implementation of appropriate climate policies, notwithstanding the urgent need for climate adaptation. The absence of precise legislation or policies that incorporate climate policy with cultural heritage intensifies the difficulties. The World Heritage Office's insufficient understanding of climate policy hinders the coordination of collective efforts.

To summarise, Bamberg's story highlights the complex connection between climate governance and cultural heritage. Achieving a harmonious equilibrium between climate adaptation and cultural preservation necessitates a subtle strategy that entails proficient communication, collaboration, and concessions among diverse stakeholders. The city needs a comprehensive policy that adheres to UNESCO principles and effectively tackles the pressing climate risks it is confronted with. Facilitating the acquisition of information, promoting effective communication, and formulating flexible solutions are essential measures for establishing a sustainable and resilient future for Bamberg.

4.11 Comparative Perspectives

Within this subchapter, it is now appropriate to delve more precisely into my three case studies by conducting a thoroughly organised comparative analysis that centres on distinct nine thematic categories. By doing so, the inclusion of the three World Heritage cities can be further substantiated, offering an even stronger answer to the initial research query about climate governance and World Heritage cities.

World Heritage Historic Cities:

Having thoroughly examined Lübeck, Regensburg, and Bamberg in this research, it is evident that these cities possess sufficient similarities to validate their initial inclusion. These German cities have common characteristics such as their UNESCO designation, independent status, and mediaeval old city centre layout. These cities have the characteristic of being surrounded by water. The primary areas of their old city centres are predominantly constructed of stone, which is why they are sometimes referred to as stone cities. Additionally, there is a limited presence of green or blue infrastructure within these city centres.

A noteworthy observation concerning the three case studies is that Lübeck had substantial devastation during WW II, whereas the old city centre of Bamberg was nearly completely destroyed, amounting to a 95% loss. Furthermore, the historic district of Regensburg maintained its integrity and withstood the effects of WW II (UNESCO, 2011; UNESCO, 2012; UNESCO, 2019).

Despite the extensive damage suffered by Lübeck and Bamberg during WW II, both cities nevertheless boast substantial city cores that are rich in historical significance. It is noteworthy that all of the case studies share a common heritage characterised by their mediaeval layout. Lübeck possesses a historic city centre adorned with significant religious and secular architectural features. In contrast, Bamberg features well-maintained mediaeval ecclesiastical and secular structures, characterised by an early European mediaeval style. Regensburg has a harmonious combination of Gothic, romanesque, and ancient Roman architectural styles. These specific details render these cities distinct, and all of them satisfy the UNESCO criteria necessary for receiving the title (UNESCO, 2011; UNESCO, 2012; UNESCO, 2019).

Regarding their dimensions, all three of these cities are classified as mid-sized cities. Lübeck has an estimated population of over 222,000, while Regensburg has approximately 175.000 residents and Bamberg has a population of around 80.000. The intriguing aspect of these situations lies in the juxtaposition of Lübeck and Regensburg, which boast a youthful and expanding population, while Bamberg, in contrast, grapples with an ageing population and a tendency for its residents to migrate towards larger urban areas (Lübeck.de – Offizielles Stadtportal für die Hansestadt Lübeck, no date; Stadt Regensburg - Deutsch - Bürgerservice, no date; Bamberg, 2022).

Protection:

Due to their independent status, these cities, particularly Lübeck which is not part of Bavaria, are subject to distinct rules for the preservation of their cultural heritage. In addition to adhering to UNESCO's operating requirements, Lübeck is subject to the legislative framework of Schleswig-Holstein and the Federal Republic of Germany. The Schleswig-Holstein Act on the Protection and Conservation of Landmarks ensures the continuous preservation of the old town and its numerous historical landmarks. The Monument Preservation Plan is an essential component of the preservation framework as it serves as the foundation for urban planning and specific architectural interventions. Moreover, the protection of the historical centre of Lübeck is guaranteed through the enforcement of a design code and a conservation act. The city of Lübeck is responsible for managing the management of the property that has been declared as a World Heritage site (UNESCO World Heritage Centre, no date a; UNESCO, 2011).

Furthermore, the city of Regensburg has been safeguarded since 1975 by the Bavarian Law for the conservation of historical edifices. The property that has been marked with an inscription is also governed by the 1982 regulations that belong to the local building ordinances for the preservation of the old town of Regensburg. The Federal Building Code, enacted in 1986 and updated in 1997, provides the legal framework for the planning, creation, and implementation of construction projects. The intricate system of safeguards, strengthened by the management plan and local regulations, guarantees the property's exceptional state of preservation. Ensuring the protection of the property is a shared responsibility among many state and municipal institutions. The City of Regensburg is under the jurisdiction of its administration. The Steering Committee engages in comprehensive monitoring as the basis for a meticulous planning process and the promotion of

sustainable development in the historic town, with a firm dedication to preserving its core principles (UNESCO World Heritage Centre, no date b; UNESCO, 2012).

Bamberg benefits from the protection of various stakeholders who are actively involved in preserving and conserving the city's cultural history. The city is safeguarded by the legal statutes and rules of the Federal Republic of Germany and the Free State of Bavaria. The legal framework that protects the World Heritage site and its surrounding area is principally defined by the Bavarian Monument Protection Law and the Regional Development Plan of the Federal State of Bavaria. The Bamberg World Heritage Office, situated within the Division for Education, Culture, and Sport of the city administration, functions as the primary centre for managing and organising affairs related to World Heritage. This office maintains tight affiliations with the Bavarian State Conservation Office, the municipal Building Office, the Economic Development Office, several educational and research organisations, and the Bamberg Tourism & Congress Service. This organisation's main responsibility is to supervise the execution of the UNESCO World Heritage Convention at the regional level. Furthermore, the office actively cultivates relationships with Bamberg's Intangible Cultural Heritage, in addition to its main duties (UNESCO World Heritage Centre, no date e; UNESCO, 2022).

A noteworthy aspect concerning the safeguarding and surveillance of World Heritage cities is that, in addition to the legal frameworks that ensure their protection, they are also subject to the oversight and monitoring of the city's administration. This fact applies to all three cities. Regensburg and Lübeck, in addition to their Monument Protection Departments, both have separate World Heritage Offices, which Lübeck lacks as an independent entity. Lübeck is under the management of the Department of Archaeology and Monument Conservation and World Heritage Management, which is a part of the city's administration.

Vulnerabilities:

Due to their shared traits, such as a mediaeval urban design and being bordered by water, these three cities also share vulnerabilities. Lübeck has experienced increasing water levels, droughts, hot temperatures, heavy rainfall, and flooding. Lübeck stands out from Regensburg and Bamberg due to its heightened susceptibility to water hazards, owing to its greater proximity to bodies of water

(UNESCO, 2011; UNESCO World Heritage Centre, no date; Interview 1, 2023; Interview 2, 2023; Interview 3, 2023; Interview 4, 2023).

Regensburg shares commonalities with the aforementioned cities, including natural challenges such as flooding and heat. Regensburg, like Bamberg, experienced its warmest summer on record in 2018. The city is vulnerable to substantial risks, including heavy but short-lived precipitation and increasing occurrences of droughts. Regensburg faces a distinct issue regarding ventilation, which sets it apart from the other two cities. In other words, it refers to the state of balance in temperature between different places (UNESCO World Heritage Centre, no date b; UNESCO, 2012; Interview 5, 2023; Interview 6, 2023).

Bamberg is confronted with challenges such as development, a significant influx of tourists, and the risk of flooding, as well as heat waves and drought. In 2018, the city of Bamberg saw its most scorching summer on record. An examination has also been undertaken to address the city's high levels of humidity, particularly within historic buildings, which can lead to the formation of cracks in the ceilings. In addition to the physical elements, the intangible cultural heritage of the city, which is also included in the inscription, is also encountering several challenges. The practice of urban gardening is declining as an increasing number of conventional farmers are abandoning traditional farming methods owing to socio-economic concerns and climate change. Moreover, the city's horticulture is a significant aspect that advocates the city's efforts to fight climate change (UNESCO World Heritage Centre, no date e; Oevermann et al., 2022; UNESCO, 2022; Interview 7, 2023; Interview 8, 2023; Interview 9, 2023).

Heritage Management Plans:

The heritage management plans of the cities do not adequately address the aforementioned challenges posed by climate change. This similarity is noteworthy in the comparative study.

Lübeck lacks specific provisions addressing the risks posed by climate change, particularly with regard to the significant issue of flooding that the city faces (UNESCO, 2011). The management plan of Regensburg distinguishes itself from that of Lübeck and Bamberg by specifically addressing climate change adaptation. It poses the question of whatever actions may be taken to adapt the World Heritage site and reduce the effects of climate change (UNESCO, 2012).

When comparing Regensburg to the other two cities, it is evident that they initiated efforts on this issue at an earlier stage. Additionally, it is worth noting that the city proactively established its own management plan prior to the implementation of conventional standards. The objective of this plan was to not only conserve the city but also to promote its sustainable development. Therefore, Regensburg appears to be a city that is better equipped to preserve and safeguard its cultural legacy, while simultaneously actively seeking solutions to address climate change and promote sustainability (UNESCO World Heritage Centre, no date b; UNESCO, 2012).

In addition, the recent management plan in Bamberg provides a concise overview of climate change, but it lacks substantial details. What are the climate change hazards that the city is exposed to? What is their significance? These are inquiries that require responses. This was verified to me when I had the opportunity to meet with a representative from the University of Bamberg to discuss the city and the impact of climate change (UNESCO World Heritage Centre, no date e; UNESCO, 2022).

Climate Strategies:

At the outset of this study, I stated that one of the goals is to investigate the influence of governance on the development of climate plans in World Heritage cities. These tactics vary between cities, but each one serves a shared objective. In order to safeguard the city from the challenges posed by climate change and establish urban futures that are both robust and sustainable. Below, it is evident that the three selected case studies have distinct purposes and objectives according to their climate policies.

Lübeck has an explicit goal of achieving carbon neutrality by the year 2040 and decreasing greenhouse gas emissions by 50% by 2030. The city's policy includes both the expansion of renewable energy sources and the continued use of fossil fuels. The master plan outlines a comprehensive strategy to generate power inside the urban area by utilising renewable energy sources, primarily through the installation of solar panels on rooftops. The city should also adopt sustainable heating systems throughout the historic district. Furthermore, there are plans to increase the number of trees in the city, resulting in a greater presence of greenery (Hansestadt Lübeck, 2023; Interview 1, 2023; Interview 2, 2023).

Concurrently, the local government in the city of Regensburg is also actively incorporating more green infrastructures, such as green roofs and facades, within the old city. This initiative aims to alleviate the adverse impacts of climate change and enhance the overall quality of life. Which is shared by the other two cities. The installation of solar panels on the rooftops of buildings is another shared characteristic among the three cities. Moreover, in Regensburg, their aim is to enhance sustainability and resilience. To do this, they prioritise the mitigation of CO2 emissions through several projects. In addition, the goal is to attain climate neutrality for the entire city by 2035 (Stadt Regensburg - Energie und Klima - Klimaresilienz, no date; Interview 5, 2023; Interview 6, 2023).

Bamberg is an exceptional instance due to its significant lack of crucial information. The city aims to employ adaptive reuse of historic buildings in the old city core, while simultaneously addressing the difficulty of incorporating flood protection measures into the existing urban fabric. In addition, they want to implement various climate adaptation strategies, such as rainwater retention, enhancing energy efficiency, shading roofs and facades, and implementing passive cooling techniques. In addition to Lübeck, there is a desire to incorporate additional vegetation in the city centre, as well as install solar panels on residential rooftops (Klimaanpassungskonzept - Klimaallianz Bamberg, 2021; Interview 9, 2023).

Climate Significance Initiatives:

Every city takes pride in the key initiatives, projects, or memberships they have obtained over time. Lübeck and Bamberg have been designated as Smart Cities, a concept which focuses on urban development in the digital age. On the other hand, Regensburg has a membership, as a city, in ICLEI, which concerns local governments for sustainability. Moreover, the city has been involved in an innovative project centred around achieving 100% renewable energy in cities and regions, known as the Energy Compact (Stadt Regensburg - Energie und Klima - Klimaresilienz, no date; Klimaanpassungskonzept - Klimaallianz Bamberg, 2021; Masterplan Klimaschutz - Stadtentwicklung, no date; Interview 1, 2023; Interview 2, 2023; Interview 5, 2023; Interview 6, 2023; Interview 9, 2023, Latinos, 2024).

Individually, Lübeck joined the Climate Alliance of European cities in 1993 and successfully reduced its carbon dioxide emissions. In 2008, Bamberg established a Climate Alliance with the primary objective of promoting the development of local heating and solar systems, as well as

improving the energy efficiency of buildings through refurbishment (Masterplan Klimaschutz - Stadtentwicklung, no date; Interview 1, 2023; Interview 2, 2023).

Simultaneously, in 2017, Regensburg implemented a novel governmental policy known as the 9th principle, which pertains to the city's energy and climate model. The principle primarily emphasised climate adaptation. In addition, the city of Regensburg is a member of the Organisation of World Heritage Cities (OWHC), renowned for its strategic initiatives and accomplishments. In other words, the objective of OWHC is to enhance the liveability and resilience of cities by equipping them for the climatic shift (Stadt Regensburg - Energie und Klima - Klimaresilienz, no date; Interview 5, 2023; Interview 6, 2023).

In addition, Bamberg was awarded the Bavarian Energy Prize for its exemplary Climate Protection Management in 2016. These minute yet crucial particulars indicate that every city, apart from its cultural heritage aspect, has been striving to achieve greater climate neutrality throughout time (Klimaanpassungskonzept - Klimaallianz Bamberg, 2021; Interview 9, 2023).

Integrating Cultural Heritage to Climate Governance:

This specific comparative theme section will aid readers in understanding more effectively the strong correlation between climate governance and the heritage field, as well as the significance of incorporating cultural heritage into climate governance. The research has elucidated the vulnerabilities of each city, highlighting both their similarities and distinctions. The qualitative study I have undertaken yields useful insights for each city, and the congruence of the results across all three cities serves as a conclusive response to the initial research inquiry.

In order for cities to achieve sustainability and develop resilient futures, they must respond to the serious challenges posed by climate change, which directly endanger the lives of people and the urban environment (Harvey and Perry, 2015; De Waal et al., 2022). Efficient and comprehensive climate strategies and policies are necessary for cities to adapt to and mitigate these changes. As previously said, it gets increasingly challenging to determine this, particularly when cities are designated with UNESCO status. Specifically, the cities I am referring to are Lübeck, Regensburg, and Bamberg.

The lack of implementation of climate initiatives has been attributed to cultural legacy. For example, the implementation of flood barriers in a city like Lübeck was not carried out since it may potentially harm the city's historical charm and put its UNESCO designation in jeopardy. Simultaneously, the city effectively partnered with a specific group of churches to execute a pilot project including the installation of photovoltaic systems on red roof tiles (Masterplan Klimaschutz - Stadtentwicklung, no date; Interview 1, 2023; Interview 2, 2023).

In Regensburg, a project was initiated to revitalise the city centre following the pandemic. As part of this initiative, a feasibility study was funded to explore the possibility of reintroducing a renewable energy and distribution network in the city centre, utilising the water from the Danube. The study determined that while it is technically feasible, the endeavour would be prohibitively costly (Stadt Regensburg - Energie und Klima - Klimaresilienz, no date; Interview 5, 2023; Interview 6, 2023).

Bamberg has successfully eliminated the tram service that used to operate in the historic city centre. In 2018, the Kraus Real Estate and Hydropower firm successfully implemented a hydroelectric power generation system at the location where the water mills used to be, showcasing the city's own tale of triumph. Ever since its establishment, the hydroelectric power plant has been providing the local power grid with electricity that is completely eco-friendly. The turbine's annual electricity production of approximately 750,000 kWh, which is equivalent to the energy consumption of 300 households, is impressive considering the waterfall's limited vertical drop. Notwithstanding the opposition and criticism directed against this project on account of the city's UNESCO classification, the city managed to successfully execute this renewable energy effort without compromising its World Heritage title (Klimaanpassungskonzept - Klimaallianz Bamberg, 2021; Interview 7, 2023; Interview 8, 2023| Interview 9, 2023).

Although there are various instances in the three cities, as readers have observed thus far, the cities also encounter shared issues. The administrations of Lübeck, Regensburg, and Bamberg aim to implement various climate measures in their respective towns. These initiatives include installing solar panels on buildings' roofs and facades, developing green and blue infrastructures in historic city centres, and promoting renewable energy projects, among others. These regulations attempt to implement energy-efficient methods in order to both conserve the cities and assure their sustainable development, as well as their ability to withstand future challenges (Stadt Regensburg - Energie und

Klima - Klimaresilienz, no date; Klimaanpassungskonzept - Klimaallianz Bamberg, 2021; Masterplan Klimaschutz - Stadtentwicklung, no date; Interview 1, 2023; Interview 2, 2023; Interview 5, 2023; Interview 6; 2023; Interview 9, 2023).

These initiatives have not been implemented due to various reasons specific to each case, such as concerns about the “viewing of the landscape” or the integrity of the city. The Monument Protection Departments, who are worried about the cities' UNESCO status and the associated risks, have been the main deterrent in each case. Furthermore, in every instance, the individuals who conducted oral interviews with me affirmed that cultural heritage has not been fully incorporated into climate policy, therefore rendering it impossible for any of these initiatives to be implemented inside the city. Simultaneously, a significant proportion of the population in each city also desires to equip their residences with renewable energy sources, among other sustainable practices. It is not coincidental that the Climate Protection Department in Lübeck does not acknowledge the city's achievements in climate governance and cultural heritage. The identical assertion was made in Bamberg. Similarly, the same phenomenon has been observed in Regensburg (Interview 1, 2023; Interview 2, 2023; Interview 5, 2023; Interview 6; 2023; Interview 9, 2023).

Lastly, in this qualitative research, it has been consistently emphasised that the incorporation of cultural heritage into climate policy is primarily a political matter. Individuals residing beyond the specified regions also have perplexity and uncertainty regarding the regulations governing the permissibility of installing solar panels on their building rooftops. Hence, it is imperative to develop novel strategies and solutions to facilitate the implementation of such initiatives in historic city centres. This is particularly crucial for small-scale projects like tree planting, which can provide shade in these urban areas, especially during the hottest days of the year. It is essential to ensure that these efforts align with the preservation of cultural heritage and the UNESCO status of these city centres (Interview 1, 2023; Interview 2, 2023; Interview 5, 2023; Interview 6; 2023; Interview 9, 2023).

Climate Governance in World Heritage Cities:

The sole purpose of concluding each interview was to achieve a particular objective. In order to obtain a direct response to the primary study inquiry: How does the UNESCO World Heritage status in historic cities affect climate governance?

All interviewees from the cities of Lübeck, Regensburg, and Bamberg provided identical responses. Hence, this is another shared aspect among the cities, which is of utmost importance for our study. Regardless of the diverse backgrounds of the participants, which encompassed climate policies, cultural heritage, and monument protection, the result remained consistent. Each interviewee explicitly explained the impact of the UNESCO World Heritage status on climate governance in historic cities. Furthermore, they all asserted that the UNESCO designation has a detrimental impact on climate governance in historic cities, specifically in the cases of Lübeck, Regensburg, and Bamberg (Interview 1, 2023; Interview 2, 2023; Interview 5, 2023; Interview 6; 2023; Interview 9, 2023).

During my research, I observed clear responses from Regensburg, while Bamberg provided uncertain answers. The World Heritage Office in Bamberg stated that they do not deal with climate change, but rather with the Climate Protection Department. However, the Monument Protection Department in Bamberg requested to contact the World Heritage Office, as they are the appropriate point of contact. The main focus of this research is the city of Lübeck, specifically the Department of Archaeology and Monument Conservation and World Heritage Management. After initial communication, interviews were conducted within the Department. The findings revealed that the World Heritage status is perceived as a hindrance rather than a support in achieving climate policy objectives.

Therefore, despite the aforementioned differences and similarities between these cities, it is evident that the UNESCO status has a negative effect on climate governance. This is due to the confusion and disagreement surrounding climate change initiatives within the historic city centres, which strive to promote sustainability and resilience. Cities must prioritise flexibility and collaboration across their divisions in order to successfully achieve their objectives.

Comparative Comments:

UNESCO Impact: All three case studies underscore the significant impact of UNESCO World Heritage status on climate governance within the respective cities. The need to navigate stringent guidelines while striving for climate resilience highlights the intricate relationship between heritage preservation and climate adaptation.

Stakeholder Collaboration: Collaboration emerges as a recurring theme in all three cities. Whether negotiating conflicts or fostering community engagement, successful climate governance strategies require coordination among diverse stakeholders, including local communities, climate departments, and heritage preservation entities.

Conflict Resolution: Conflicts and negotiations are inherent in the implementation of climate policies within heritage areas. While challenges exist, there are instances of successful conflict resolution and compromises, showcasing the resilience and adaptability of these cities in addressing climate-related concerns within the context of their cultural heritage. At the same time though a lot of work needs to be done in order to make cities sustainable and resilient through climate governance and the integration of cultural heritage. All in all, each city offers valuable insights into the complexities of climate governance within UNESCO World Heritage cities, emphasising the need for innovative solutions, stakeholder collaboration, and a delicate balance between modern climate goals and the preservation of historical identity.

Throughout the exploration of the three World Heritage cities, it has become evident that all of them are confronted with significant difficulties posed by climate change. It is evident that cities must combat climate change in order to ensure their survival. In order to develop resilient futures, it is necessary for them to both minimise the dangers and adapt. This becomes increasingly challenging when cultural assets, particularly in UNESCO-designated cities, are also involved. Based on the qualitative investigation and examination of official and key documents, it is highly improbable for a World Heritage city to successfully implement climate plans or initiatives inside its historic cities and on historic structures. The current scenario appears to be quite steady, with both positive and negative fluctuations. However, there are potential solutions to address these issues. Cultural heritage holds significant value and hence warrants both reverence and strategic handling. In this study, I have examined the potential of cultural heritage in helping historic cities attain resilient ecosystems and sustainable futures by enhancing their climate governance. Simultaneously, cities like Lübeck, Regensburg, and Bamberg should seek methods to include their heritage in climate strategies, while also fostering collaboration amongst the Monument Protection Departments.

According to Latinos (2024), this task requires cooperation with both local government officials and influential individuals in the city who are involved in advocacy. In this manner, it would be possible to potentially implement strategies that are suitable for both departments. As he clarified,

ICLEI follows a comprehensive approach to achieving resilient planning, consisting of around 27 steps. When implementing this in a UNESCO-designated city, the technique is modified to align with the local context, national frameworks, and the specific type of heritage. However, it remains exceedingly challenging to execute a robust strategy for cities that own the UNESCO designation. The issue mostly stems from legislative matters. These cities might use the same approach to execute effective and constructive measures for climate governance in a more adaptable manner.

By addressing the aforementioned issues, such as the construction of solar panels and the rejection of initiatives for greater vegetation in the city, viable solutions might be found. Concurrently, Latinos (2024) corroborated the identical faulty narrative that I noticed in my three case studies. ICLEI has seen instances where cities desired to implement resilient projects but were unable to do so because of the opposition from Preservation Departments. Many cities are enthusiastic about these projects, but progress often halts when heritage becomes a factor. He informed me that in small cities, the concept of political correctness is more apparent in matters of climate governance and cultural heritage. In Germany, the political programme of each candidate holds significant importance, and they typically adhere to it. Furthermore, the World Heritage cities in Germany possess the esteemed UNESCO title and are resistant to making any alterations. This assertion is completely consistent with my three case studies.

To address this issue, cities should adhere to guidelines that prioritise their sustainability. By implementing practices that integrate heritage and sustainability, cities can ensure that their status remains unaffected. Lübeck, Regensburg, and Bamberg cannot have their status revoked due to increased vegetation or the use of renewable energy sources within their city centres. Climate change is a reality that will undoubtedly impact cultural heritage. Therefore, cities and departments must prioritise resilient planning and climate policies. Safeguarding cultural heritage should be among the top three priorities for cities. Climate policies typically do not encompass cultural heritage, but there are exceptions, such as in Hamburg where the threat of flooding leaves no alternative. However, the noteworthy aspect is that the German Ministry of Environment is pioneering the development of a national law for climate adaptation and this could potentially change this problematic narrative. Hence, the UNESCO status has an impact on climate governance, and subsequently, national rules also contribute to this influence. Consequently, there is a significant requirement for flexibility among stakeholders and departments, as well as the necessity for collaboration (Latinos, 2024).

5. Discussion

My comprehensive investigation of climate governance of the World Heritage cities of Lübeck, Regensburg, and Bamberg uncovers a notable resemblance in the difficulties they encounter. The comparative analysis, based on official policy documents and qualitative research, highlights the distinct intricacies that emerge from their common classification as World Heritage cities. Although there was initially doubt about using this comparative method due to the unique characteristics of each city, it becomes clear that their cultural heritage distinction has important consequences for climate governance. This fact was confirmed in the literature overview where it was clearly stated that World Heritage cities are vulnerable to evolving policies, as well as through my qualitative research. Therefore, there is a big need for well-designed climate policies with the climate governance and cultural heritage context (Fatoric and Egberts, 2020; Kern et al., 2021; Cave, 2022; Daly, 2022). Notwithstanding the constraints posed by language barriers or uncooperative stakeholders, the findings of the qualitative investigation suffice to derive conclusions.

The key concern that arises is the complex interaction between preserving the UNESCO World Heritage designation and implementing effective climate governance policies. The current understanding of this subject is limited due to a lack of information on this particular topic, as indicated by Fatoric and Egberts, (2020); and Kern et al. (2021) at the outset. The problems found in the three case studies are not only similar but, in many instances, impossible to differentiate. This emphasis on the significance of cultural heritage extends beyond a mere collection of historical items. Heritage should be approached and understood from a more human-centred perspective, as suggested by Auclair and Fairclough (2015); and De Waal et al, (2022), which is consistent with the research stated above.

Recognising the importance of prioritising people, cultural heritage is recognised as an intricate and constantly evolving organism that faces significant challenges, especially in regard to climate change (Brimblecombe, Grossi and Harris, 2010; Harvey and Perry 2015). The adoption of environmentally sustainable measures, such as the installation of solar panels or the planting of trees, is impeded by the stringent requirements set by monument preservation authorities. The departments have voiced concern over the possible hazards associated with altering the original terrain, which adds complexity to the work of achieving climate resilience, as validated by qualitative study. Based on my thorough study and discussions with heritage offices, it is evident

that historical preservation is usually the primary focus. However, my research is revealing a broader perspective. The primary discovery of my research is that the UNESCO status has an impact on climate governance in World Heritage cities in a negative way.

It is complicated for city administrations to implement climate policies when the denial and confrontation between departments get accentuated. There is a big need to advocate for both departments and enhance their relationships and this should occur either from a national (government) or international level (UNESCO). Since the UNESCO status blocks initiatives like solar panels, photovoltaics, and more greenery within the city, it has to be accentuated that human life goes second. Therefore, it is necessary for cities to implement a formula where these issues can be solved. Compromises need to be made by all of the stakeholders.

Above all, the preservation of cultural heritage is an undeniable necessity. Preserving cultural heritage, as demonstrated by my three case studies - World Heritage cities -, is a unique obligation. Considering the significant impact of climate change on cultural heritage, it is imperative for cities to adjust and address these difficulties by promoting sustainability and resilience (Soini and Dessein, 2015; Labadi and Logan, 2016; Labadi, 2022).

Furthermore, my research has clearly demonstrated the significant role of cultural heritage in facilitating urban growth. The use of practices such as the adaptive reuse of historic buildings may make a substantial contribution to sustainability (De Waal et al., 2022; Labadi, 2022). Therefore, it is imperative to incorporate cultural heritage into both development and climate policies. The integration is crucial not just for attaining resilient futures, but also for safeguarding cultural heritage for future generations (Smith, 2006).

The UNESCO designation imposes constraints, especially in buffer zones and city centres, which offer challenges for municipal governments aiming to improve efficiency, sustainability, and resilience. The reluctance to adopt renewable energy sources or include environmentally friendly infrastructure, as seen by the cautious attitude towards solar panels and tree planting, highlights the significant influence of historic concerns on climate governance.

As I examine particular instances, such as the hesitancy to install solar panels because of concerns about preserving authenticity, or the difficulties of planting trees in urban areas, it becomes clear

that the UNESCO status has a significant impact on the direction of climate policies in these historic cities (Fatoric and Egberts, 2020; Kern et al., 2021, Cave, 2022; Daly, 2022). Every environmentally conscious effort requires careful analysis and cooperation with ministries responsible for preserving monuments and treasures. This highlights the complex relationship between cultural preservation and environmental sustainability.

Hence, in order to offer a conclusive answer to climate change, it is crucial that we build a precise comprehension of the elements that define cultural heritage. If we rigorously stick to conventional criteria that focus on physical structures, results may vary dramatically from those obtained from a more current perspective, commonly known as the “new heritage approach”. The selection of viewpoints significantly impacts the evaluation of the circumstances and the activities pursued. Truly, the notion of heritage goes beyond conventional ideas, including a diverse range of cultural, social, and historical aspects. It encompasses not just actual items, but also the narratives, customs, traditions, and intangible elements that influence our sense of self and social groups. By adopting this more expansive viewpoint, we are able to fully see and value the intricate and abundant nature of our cultural heritage.

Altering the approach and mindset in the field of heritage preservation can certainly be a gradual process. The phenomenon of resistance to change is frequently observed as an initial response when novel concepts or tactics are presented. The resistance phase can endure for an extended period, as individuals engaged in heritage preservation often have strong emotional ties to particular buildings or sites. Historically, preservation studies in Europe and other areas commonly involved concentrating on a single renowned building or location and committing one's academic and professional pursuits to its conservation (Nilson and Thorell, 2018).

Nevertheless, with the broadening of the heritage preservation concept to encompass wider cultural, social, and environmental factors, there is an increasing recognition that a more comprehensive approach is required. This transformation is frequently followed by a movement from opposition to a mentality that is more receptive and willing to consider new ideas. The statement recognises that heritage preservation extends beyond individual structures and encompasses a broader framework that incorporates adaptive approaches to tackle climate change, urbanisation, and other present-day obstacles (De Waal, 2022). Hence, in the event that an individual's life is at risk as a result of climate conditions such as intense heat in Regensburg and the restriction of access to the city centre,

it becomes crucial to adopt initiatives such as tree planting or other projects, along with innovative climate policies. In essence, all actions related to preservation ultimately prioritise the welfare of individuals.

UNESCO is actively engaged in tackling climate change and is fully committed to these efforts. However, UNESCO does not clearly state that World Heritage sites must stay unchanged due to their heritage classification. This approach is mostly advocated by preservationists. It is no mere happenstance that all participants in the qualitative research consistently affirmed that the UNESCO World Heritage status has an impact on climate policies. Not directly from UNESCO, but rather from the departments responsible for the preservation and protection of monuments (Interview 5, 2023).

It must be noted though that there is no specific UNESCO guideline that prohibits the installation of climate change initiatives like solar panels on the roofs of historic structures. That would provide a challenge due to the varying tile and brick types found in each structure. Furthermore, the energy consumption and acquisition of each building exhibit distinct dynamics.

A common misconception is that UNESCO only intervenes in major projects like skyscrapers and bridges when it comes to changes in the urban fabric. However, smaller details, such as solar panels, typically do not occupy the central focus of their attention. The logistical challenge of applying UNESCO's oversight to all its inscribed sites for something as detailed as solar panels is not feasible from a mathematical standpoint (Interview 5, 2023).

In essence, while UNESCO is dedicated to heritage preservation and climate change adaptation, they do not inherently oppose smaller-scale, sustainable interventions like solar panels on heritage buildings. This highlights the need for a nuanced approach that balances heritage preservation with modern sustainability practices.

In summary, the UNESCO World Heritage status exerts a profound influence on the climate governance of Lübeck, Regensburg, and Bamberg. While the cities are actively pursuing climate adaptation policies, the need for a delicate balance with heritage considerations remains a constant challenge. The intricate confrontation between preserving the authenticity of historic landscapes and

embracing sustainable, climate-friendly measures reflects the complexity of managing these unique urban environments in the face of global climate change (Ferreira et al., 2023).

Addressing critical issues like climate change necessitates viable solutions that can improve people's lives, preserve cultural heritage for future generations, counteract climate change, and, crucially, establish resilient urban environments. My study focuses on climate governance in World Heritage cities, offering solutions derived from my research in Lübeck, Regensburg, and Bamberg. These solutions can be adaptable for implementation in cities of a similar scale, emphasising the need for flexibility.

World Heritage historic cities present abundant opportunities for climate protection and adaptation, serving as potential catalysts for the development of climate-resilient urban areas. Historic cities like Lübeck, Regensburg, and Bamberg can contribute to sustainability through their urban models. The inherent characteristics of historic urban environments, including the use of natural building materials and environmentally friendly construction practices, contribute to minimising CO₂ emissions. The maintenance, renovation, and adaptive reuse of old buildings play a crucial role in preserving their grey energy and fostering circular reuse, leading to a reduction in CO₂ emissions.

Furthermore, heritage buildings can leverage traditional techniques, such as providing a positive indoor climate even on hot days, contributing to climate adaptation in buildings. This applies not only to residential structures but extends to old churches, which can be repurposed as cooling rooms open to the public during extreme heat days in the summer. The multifaceted benefits offered by heritage cities underscore their potential to lead the way in sustainable and climate-resilient urban development.

In order to achieve this goal, a comprehensive approach entails the implementation of educational and training programmes within cultural preservation departments. Commencing with these initiatives, a progressive enlargement encompassing many fields might offer a more all-encompassing strategy for climate governance and cultural heritage. It is crucial to urge preservationists to accept the notion that heritage includes not only particular buildings, but also the surrounding ecology, intangible cultural elements, and sustainable approaches. In addition, promoting communication and cooperation among preservationists, urban planners, environmental

specialists, and other stakeholders might facilitate the development of a more adaptable and inclusive approach to safeguarding heritage in light of changing problems like as climate change.

Integrating academic and practical aspects in universities and cultural institutions can improve the training of professional skills in sustainable conservation. Furthermore, it is crucial to publish a full theoretical framework on the subject of “Climate Governance and Cultural Heritage” due to the existing absence of thorough advice. UNESCO's participation in tackling this issue, maybe by releasing new guidelines, might assist in clarifying misunderstandings between climate efforts and cultural heritage among different departments. Campaigning, communication, awareness, and education are crucial in promoting and progressing these projects.

Every city, such as Lübeck, Regensburg, and Bamberg, ought to cooperate in gathering data through their respective administrations, city councils, and Climate and Monument Protection Departments. This collective endeavour will facilitate the identification of precise climate adaptation requirements in historic urban cores, ensuring that local remedies are in line with the distinct demands of each city. Cities may proactively tackle climatic problems by creating a comprehensive strategy for the HUL that is not dependent on UNESCO status considerations.

The new historical and climate-friendly initiatives may incorporate innovative features such as a specific emphasis on old town squares, where the integration of combined heat and power plants for many buildings may be executed. Furthermore, the complete utilisation of photovoltaics on rooftops that are not visible might provide power to nearby structures. Permitting the implementation of vegetation on the outside walls of historic structures, subject to particular laws, in addition to planting trees and plants along sidewalks, may effectively contribute to the advancement of sustainable urban development.

It is important to investigate sustainable transportation alternatives, such as prioritising cycling over vehicle usage or introducing electric buses. Furthermore, implementing an additional levy on non-sustainable products might serve as a motivation for adopting environmentally friendly methods. Addressing these concerns requires political actions and the enforcement of new legislation. It is imperative to include heritage management as a vital component of contemporary and sustainable urban development. This requires changing the perception of history from being seen as a hindrance to being viewed as a potential advantage.

Enhancing the quality of life through the use of cultural heritage entails the application of certain fundamental concepts. The adaptive reuse of heritage buildings should not only provide financial benefits but also provide social and personal advantages, therefore encouraging community engagement. Given that the worth of heritage is intrinsically linked to people's perspectives, it is essential to prioritise not just the physical state of cultural structures, but also the experiences of those who use them. It is crucial to involve younger generations in the enjoyment of heritage since this helps cultivate a feeling of ownership and connection. Moreover, giving more importance to cultural heritage in urban regeneration initiatives might assist in comprehensive development.

Facilitating multidisciplinary and cross-departmental cooperation dismantles barriers and incorporates a wide range of viewpoints, expertise, and preferences. Stakeholder participation in the cooperative formulation and execution of solutions, along with heightened engagement of politicians, enhances the efficacy of historic conservation endeavours. The integration of community engagement and bottom-up techniques, which view neighbourhoods as local support bases for the adaptive reuse of heritage buildings, may be effectively combined with top-down tactics to provide a harmonic approach to conserving heritage and developing urban areas.

A comprehensive strategy is crucial in the context of climate protection and adaptation. Efficient planning solutions that encompass several aspects are necessary to properly tackle climate change. Encouraging the adaptive reuse of buildings not only conserves energy but also enhances sustainable urban development. Reducing the environmental effect of heritage conservation involves implementing strategies such as greening old cities, incorporating renewable energy into historical projects, and investigating localised solutions for neighbourhoods.

Altering individual mindsets is crucial when confronted with climate concerns. Recognising the significance of conserving history as a collective effort and acknowledging individual accountability in tackling climate change is crucial. Embracing a mentality that regards challenges as chances for inventive thought and aggressively pursuing groundbreaking resolutions can propel favourable transformation. Cultural heritage demonstrates a crucial role in facilitating these changes in thinking and behaviour.

Ultimately, the examination of Lübeck, Regensburg, and Bamberg's case studies reveals insight into the complex relationship between the preservation of cultural heritage and the existence of climate

strategies (protection/adaptation) in historic cities designated as World Heritage sites. These cities from the mediaeval era encounter common difficulties, highlighting the need for a heritage strategy that prioritises the well-being of individuals, requiring adaptability among different departments and cooperative endeavours. UNESCO must develop creative techniques and guidelines to match conservation and sustainability aims in order to maintain the delicate equilibrium between its World Heritage designation and climate policy. At the same time the narrative and discourse that cultural heritage needs to be protected from climate change critical challenges, could work as a way to monument protection departments on board and solve the ongoing denials and confrontation for renewable energy projects, resilient, and sustainable plans. The suggested remedies, based on the examination of these instances, emphasise the significance of education, multidisciplinary cooperation, and community involvement. Adopting a more comprehensive view of heritage, which takes into account ecological, social, and historical aspects, guarantees that choices are focused on the well-being of individuals and are able to withstand challenges.

When considering future research on the combination of climate governance and heritage management, it is crucial to focus on the significant gaps and problems that exist in this field. Researchers studying climate governance and cultural heritage should first focus on comprehending the complex relationship between changing climate patterns and the protection of cultural heritage in World Heritage cities. This involves exploring the precise mechanisms by which climate change affects cultural heritage sites, including the susceptibilities, adaptive capabilities, and methods for resilience that are relevant to various cultural contexts.

A notable study deficiency exists in comprehending the intricate interactions between climate policies and heritage preservation methods, encompassing both local and global contexts. Although attempts have been made to include climate adaptation methods into cultural heritage frameworks, there is a lack of thorough research investigating the effectiveness and difficulties of this integration, especially in the context of World Heritage cities. Exploring the intersection between climate governance activities and heritage preservation goals, and identifying potential conflicts or synergies between them, is an important subject that requires additional investigation.

Furthermore, it is essential for scholars to investigate how governance structures and policy frameworks might either support or hinder the implementation of climate-resilient initiatives aimed at protecting designated heritage sites, without risking their UNESCO status. This requires a

comprehensive analysis of the institutional structures, stakeholder involvement, and regulatory frameworks that influence decision-making processes concerning cultural preservation and climate adaptation. Through analysing the intricacies of governance structures, academics can provide valuable insights into the ability of World Heritage cities to adapt and minimise the negative impacts of climate change on cultural heritage sites.

Additional clarification is needed about the assertion about the little-explored influence of UNESCO designation in reducing the effects of climate change on cultural heritage sites. Future research could focus on investigating the precise mechanisms by which UNESCO designations impact policy development, resource allocation, and management practices in World Heritage cities. Researchers can enhance the development of solutions to safeguard heritage sites in the midst of environmental uncertainties by analysing the concrete results and constraints of UNESCO's efforts in climate governance and the cultural heritage field.

Essentially, identifying research gaps and challenges helps to stimulate scholarly investigation into the connection between climate governance and heritage management. This, in turn, promotes the development of stronger and more contextually informed strategies for sustainable development and cultural preservation in World Heritage cities.

6. Conclusion

Ultimately, this study sought to investigate the impact of the UNESCO status on climate governance in World Heritage cities, with a special emphasis on policies, methods for reducing the effects of climate change, measures to adapt to changing conditions, sustainability efforts, and the ability to withstand and recover from environmental challenges. Although there is a scarcity of academic literature on the combination of climate change, governance, and cultural heritage, my study consolidated many academic frameworks related to these topics. This methodology allowed for adaptability in examining climate governance and cultural heritage while highlighting the lack of extensive literature on this noteworthy subject.

The cultural heritage, an essential element of our societal structure, is becoming more susceptible due to the effects of urbanisation, globalisation, and the rapid consequences of climate change. World Heritage cities, characterised by their distinctive historical and cultural resources, attract significant attention and interest. My research has shown that the fast and severe effects of climate change events endanger both cultural heritage and the lives of people in these cities. City administrations must respond promptly and wisely, adjusting to climate risks and promoting sustainable and resilient urban environments by using their cultural heritage.

Nevertheless, my qualitative investigation carried out in mid-sized World Heritage cities such as Lübeck, Regensburg, and Bamberg, has shown a common set of difficulties. The integration of environmentally sustainable projects, such as solar panels, green spaces, heat pumps, and renewable energies, into urban areas has challenges arising from the limitations imposed by the UNESCO designation. The stakeholders, especially those involved in Climate and Monument Protection, repeatedly verified this revelation. The convergence of environmentally sustainable activities and UNESCO standards presents a challenging scenario, impeding the efficient execution of crucial methods required to address climate risks in World Heritage cities.

To overcome these problems, it is necessary to use sophisticated and cooperative strategies that enhance and advocate the ways climate governance could function within the context of World Heritage cities. There is a necessity to reassess the current legal frameworks in order to achieve a harmonious equilibrium between the preservation of cultural heritage and the implementation of climate change strategies. Constructive discussion between city administrations, UNESCO, and

local communities is essential to discover new solutions that protect the distinctive history of World history cities while also enabling them to effectively address the urgent issues presented by climate change.

Ultimately, this study illuminates the intricate relationship between the designation of UNESCO World Heritage cities, climate governance, and the preservation of cultural heritage. The results emphasise the need for a comprehensive and flexible strategy that guarantees the durability of World Heritage cities in the presence of climate change, while also honouring their cultural and historical importance that shapes their distinctiveness and at the same time the path to solving every confrontation between departments in order to achieve sustainability and resilience through climate governance.

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