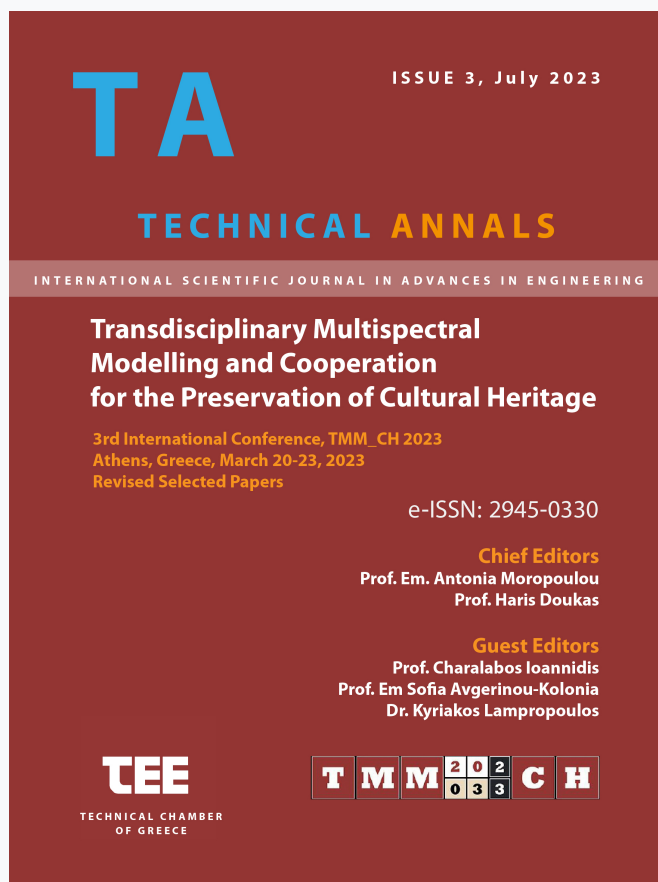


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The need to safeguard cultural heritage against climate change

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The need to safeguard cultural heritage in Albania against climate change

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Abstract. The biggest challenges of our time are climate change and the preservation of cultural heritage. In the Albanian context, promoting innovative ways and incentives for the traceability of cultural heritage is seen as a solution for regenerating new insights to support and safeguard culture. The aim of the paper is to assess the threats posed by climate change and other risks in order to prevent deterioration, enhance protection and reinforce related policies. The interdisciplinary research presents different aspects of securing sustainable development through culture and cultural heritage. The findings indicate good practices and innovative measures for the protection of Albanian cultural heritage against climate change. Moreover, the discussion is placed within the role of local and policy-making processes in validating and promoting solution for the effective resilience of cultural heritage against climate change through this multidisciplinary research.

Keywords: Cultural heritage, Climate change, Innovative measures.

1 Introduction

Climate change with extreme weather and environmental degradation are among the greatest threats to culture and heritage, starting from physical damage to issues on the practice and transmission of cultural traditions [1]. Global cultural heritage is threatened by the increasing severity and frequency of natural disasters caused by climate change [2]. International experts and researchers emphasize the importance of managing cultural heritage sustainably [3], [4]. Culture and heritage are crucial concerns for addressing climate change in a postmodern society as an effect of growing globalization challenges, from management practices to psychological states, for communities during and after climate-related emergencies [5].

Studies show that culture and heritage play a fundamental role in achieving sustainable development and they are also sources of creative solutions to climate issues [6]. The importance of cultural heritage for sustainable development has been widely recognized and supported by creating and sharing a common goal specific to strengthening global efforts to protect the world's cultural and natural heritage [7], [8], [9].

This study aims to explore Albanian challenges for sustainable development through culture in its tangible and intangible dimensions. It discusses the potential challenges climate change presents to cultural heritage and the need to safeguard it as an important aspect affecting the Albanian context to adapt to climate change and to support the creative economy and tourism. Based on climate change models studying the current and past climate systems developed over the past few decades, attempts have been made to identify the main threats from climate change, including the threats to historical and archaeological remains that characterize Albanian cultural heritage. The study also shows how sustainable practices in cultural heritage have been implemented in the face of climate resilience. Special attention is dedicated also to awareness-raising practices and to the steps in inventorying parts of cultural heritage in Albania.

1.1 Cultural heritage in the climate change era

The term cultural heritage has its origins in the roots of humanity and it is preserved as a cherished value in all cultures that have been passed down through the generations [10]. Cultural heritage combines cultural and natural heritage, this is the definition of the UNESCO Convention for the Protection of the World Cultural and Natural Heritage held in 1972. This concept is related to the universal understanding of heritage and the common preservation of the most precious places of cultural and natural importance [5]. Many cultural heritage assets such as the contents and collections of historic buildings, monuments and archaeological sites are a heritage that is linked to the identity and well-being of the local population [11], [12].

Cultural landscapes of Albania, often characterized and enhanced by the presence of exposed and buried archaeological remains, are threatened by environmental processes, anthropogenic pressures and, more specifically, by climate change and natural hazards. The identity and values of heritage buildings are the strongest reasons to preserve and restore them. These heritage assets have always been interacted and will continue to do so with their environment, mainly influenced by constantly changing weather factors [13].

The intangible form of culture appears as the memories, emotions, values, customs, and use of instruments, objects, and cultural spaces that communities, groups, and in some case, individuals recognize as part of heritage culture [14]. Tangible or intangible forms of culture connect us with the past and help in understanding the present we live in and what we will pass on to future generations. Those keep us connected to religions, traditions and beliefs, creating and developing identities as individuals and communities [15].

Cultural heritage plays a strong role in both economic and social life, although most of it remains informal, without public protection and without clear management as they are the main institutions that link history, territory and society, defining the cultural context of social life [16].

Climate change poses a major challenge to cultural heritage, as many of the negative effects we now face are unprecedented. Extreme climate change exacerbates the exposure of cultural heritage to climate stressors causing serious damage [39]. We are facing a new situation that we have not faced before, and we have no previous model. Thus, we need to react in creative ways to climate changes [17], [18]. Currently, climate

change represents one of the biggest threats to culture and heritage, as physical damage and periodic damage due to changing weather conditions and recent cases of extreme impacts have increased. The obvious threats to Europe's tangible and intangible cultural heritage come from climate events such as heavy rainfall, prolonged heat waves, droughts, strong winds and rising sea levels, which are likely to rise dramatically in the future with immediate consequences, such as floods, forest fires and erosion [19]. Climate change is also a problem for building interiors, as outdoor climate conditions can directly affect indoor conditions in uncontrolled buildings, such as many historic buildings [20]. Museums house a variety of collections, organic and inorganic, often housed in historic buildings that lack modern climate control measures and equipment, so the potential impacts of climate change on indoor environments must also be assessed [16], [21].

Reducing impacts on the environmental system is part of the circular economy strategy that represents a tool for achieving and implementing sustainable development, with the aim also to minimize negative impacts on cultural heritage. [22], [23].

Culture and heritage are primarily local phenomena due to hundreds and thousands of instances in the history of human settlements and their local conditions. In this context, local, regional and central governments have a responsibility to protect them. The urban population must have access to a new culture that responds to the needs and other goals of sustainable development [24].

Climate change in the world has led to several negative effects, including increased temperature, changes in humidity, increased heavy rainfall that causes flooding; dry summers appear to increase the impact of droughts and unpredictable weather conditions [25].

1.2 Situation of Albanian cultural heritage

Following a needs assessment and UNESCO support, Albania is taking new steps for cultural development strategies by building professional and institutional capacities for the preservation of its living heritage [26]. The situation is very sensitive as a result of the dynamic processes that occurred after the fall of the communist regime in 1990. In the system of the communist dictatorship, the administered cultural values did not have the proper evaluation. Albania's cultural heritage is a rich and diverse mosaic of cultural elements, expressions and crafts. It includes natural, built and archaeological sites, museums and monuments, works of art, music and visual arts.

However, this heritage is facing significant challenges in maintaining its sustainability in the face of episodes of extinction [27]. The transformations after 1990 created new opportunities for economic and social development, but they also brought new dilemmas, such as continuous waves of emigration, the collapse of previous state institutions, economic problems that particularly affected rural communities and their cultural traditions. Migration of people in cities and abroad has left many villages depopulated, affecting with the damage of cultural buildings [26].

Albanian cultural heritage is under the effect of natural damage and human destruction, therefore it must be protected, because it is the main economic source for tourism and economic and social development [28]. The impact of sea level rise on large archaeological sites in Albania, such as Butrint, Durrës Amphitheater and Apollonia, is

evident in a mix of seascape, archaeology, ecology, history, mythology and aesthetics that makes these archaeological centers magic from the most historical sites of Mediterranean [26]. In addition to being a World Heritage Site of archaeological value, the region of Butrinti is also home to an active wetland habitat [29]. Forecasts of different temperatures and their impact on sea-level rise present a complex challenge for the present. Extensive excavations and a multi-volume series of accompanying scientific publications have made this a key site for maintaining an ancient and other culture since sea level rise. Butrint land flooding will not be new. Major human-environmental change, accelerated by deforestation, will occur through the next millennium.

By the Greek Archaic period, the ruin was receding. Instead, they were formed in a way that could be traversed while looking at the high points of the landscape. Long-term falling sea level occurred in the early Roman period. The ancient city of Butrint is a place one meter below the current level. Geological and climatic changes caused the lowering of the sea level in Butrint, which was accompanied by submergence of some of its monuments that are permanently or periodically flooded [29]. The climatic effect in Butrint has come from the retreat of glaciers and ice masses, hot weather, droughts, cyclones, fires, rain and climate changes towards the poles [29]. In Butrint, it is important the way of managing and finding a solution to face the risk of climate change [1].

The heritage of over 3000 years of continuous settlement must be preserved with all its values while maintaining the balance between heritage protection, tourism and development [40]. The initiative of the Albanian-American Development Foundation (AADF) and the Ministry of Culture for implementation of the project for the revitalization of the Roman Amphitheater of Durrës together with the Byzantine Forum and the Roman Baths is a contribution to the restoration and reuse of the cultural heritage of the city and the combination of physical and visual connections between historical and cultural assets. This will turn the city's urban heritage into an inexhaustible tourist attraction in Albania and the region that will further promote local economic development [30].

The ancient city of Apollonia is located in southwest Albania, about 13 miles from the city of Fier. The fascinating landscape of the archaeological park, which has been preserved in an extremely intact state, constitutes a successful combination between the beauty of the monuments and nature, attractive throughout its long history, in an atmosphere of relaxation and meditation. Much of it remains undiscovered to this day, representing an interesting and attractive place for various researchers. The cultural development of Apollonia and its status as a major city of the ancient Mediterranean world is evidenced by the outstanding monuments preserved within their original boundaries, such as Doric temples, various public buildings and a series of houses with well-preserved mosaic pavements [27].

The AADF has taken over the management of Butrint National Park, Durrës Amphitheater and Apollonia, providing funding from UNESCO and the Albanian government. These cultural centers therefore have a new management structure and philosophy. This bold and timely initiative represents a combination of the non-profit and public sectors, with the freedom to envision a long-term and sustainable financial future for the site and, most importantly, to plan accordingly for climate change [31].

2 Methodology and materials

The methodology that was used during the survey involved a preliminary gathering of information about the status of Albanian cultural heritage and about the different agencies involved in it on a national and local level. It was followed with preparation of a sample questionnaire that was used in interaction with different stakeholders during frequent visits and conversation and interviews conducted with cultural heritage practitioners and representatives of different public institutions in Albania.

In order to find data related to the state of cultural assets and the impact of climatic conditions and other extreme conditions, data sources of the Ministry of Culture and Tourism, data of projects on cultural heritage and its preservation were used. Scientific articles by Albanian and foreign authors have been a source of data as have been discussions regarding the current state of heritage and the harmful consequences caused by weather disasters and earthquakes.

Methodically, it is intended to select information to answer questions such as: What is the situation in Albania regarding the preservation of the diverse wealth of cultural heritage? Has there been damage caused by extreme climate conditions and natural disasters and is there a strategy for the preservation of cultural heritage? This study is based on a detailed analysis of events, facts found in recent years on the basis of literature sources and data collected from institutions, associations, individuals and direct contacts with representatives of museums, archaeological centers, institutes and cultural institutions.

3 The experience of climate change impact on cultural heritage in Albania

There is much to be learned from the Albanian cultural heritage presented and represented until today mainly by central and local public archaeological sites, which have developed private financing with autonomy and profitability, transforming into centers of global tourism [32]. According to UNFCCC data, in the last three decades in Albania, temperatures recorded above 37-40 degrees Celsius have increased [29]. Higher temperatures lead to longer periods of drought, extreme weather events and higher erosion. Climate change impacts biodiversity, ecosystems, and the forestry sector. Land use is another factor that is affecting cultural heritage in Albania [29], [33]. The heavy rain that hit Albania in 2018 damaged cultural heritage sites, such as churches and mosques in Gjirokastër, which had been added to the world heritage sites in 2008. This city lost two of its old houses in the middle of the city, originating from medieval bazaar. For years, these buildings have lacked maintenance, but there have been other damaged buildings in Gjirokastra as well.

According to conservation experts, heavy rain was not the only cause of damage [34]. The castle of Libohova was also damaged, and it lost its interior due to the rains. Neglect over the years as well as mismanagement have contributed to these damages. Shkodra's Lead Mosque, built in 1773, is a cultural symbol for the country that is constantly under water after heavy rain. The church of John the Baptist in Derveni, near

Kruja, built in the 13th or 14th centuries and considered a monument of the first category, suffered the greatest damage. This church had been flooded even before the recent heavy rains. Being located below the surface of the earth around which it is dug, it often finds itself under the water that comes out every time it rains [35].

The city of Berat is a historical site under the protection of UNESCO, but in the last ten years it has suffered damage, losing some old houses which have been damaged by chemical factors and lack of maintenance [36]. The lifespan of objects and buildings as cultural heritage is significantly affected by geophysical factors; it is enough to mention here the cobblestones damaged by erosion. The amphitheater of Durrës has been damaged under the influence of climatic factors and urban interventions [32].

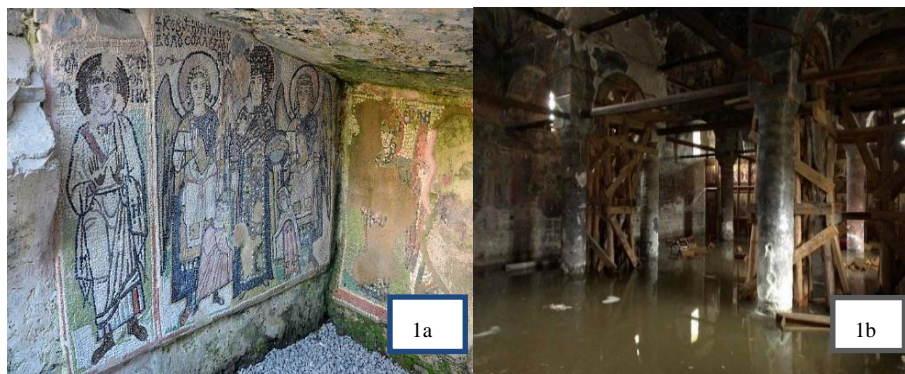


Fig. 1a. Climate damage of mosaics of the basilica in the amphitheater of Durrës

Fig. 1b. Flooding of the Archangel Michael and Gabriel Church in Voskopoja

The Foundation for the Management of Butrint has drawn up a plan with a series of activities and challenges for a period of ten years and seeks the support and commitment of the local community for the protection of the heritage of the ancient city of Butrint from the flood. Climate change protection is already the main issue in the foundation's activities [37]. Touristic activities of these archaeological centers will be endangered over time, because within the next decade there will be further sea level rise [38]. Actions to protect against submergence have included: obtaining reliable annual data on the destructive effects of floods through a hydrological survey; consolidating relations with the villages of the area, developing and implementing a program of archaeological works that record and document as much of the archeology as possible, including the use of salvage archeology for materials at risk of extinction [1], [38].

The changes in the ecology of Butrint have also been evaluated by measuring the salinity of the underground water, which has increased and has thus affected the forests around it.



Fig. 2a. Water standing in the Roman theatre of Butrinti

Fig. 2b. Flooding of Lead Mosque in Shkodra

Most ancient sites in the eastern Mediterranean have witnessed natural events very damaging to archaeological sites, such as volcanoes, earthquakes, floods and tsunamis, plagues. But by learning from such events, planning is done on how to respond, especially in terms of ensuring that information is not lost and important artifacts are preserved [39].

Lin's Basilica, an ancient cultural heritage, is located on a peninsula formed by a hilly outcrop near the shore of Lake Ohrid. Its magnificent mosaic is easily exposed to water, which is damaging it [40]. The Europeanization process of Albania with the tendency to create a new modern one is damaging the cultural heritage. By examining different types of tangible culture, including museums, memorials, religious buildings and archaeological sites, as well as investigating heritage from several periods of Albania's past, whether remnants of the Roman or communist period, it is clear how they have lost cultural heritage values [39].

4 Discussion

Ancient cultural sites were designed for a specific local climate. The action of damaging factors can have negative impacts on the preservation of built and natural heritage. Sea level rise threatens many coastal areas. The conditions for the preservation of archaeological evidence can be degraded under the action of earth's temperature. Climate change affects social and cultural aspects; it will change the way of life of communities, leading to migration and abandonment of their built and natural heritage [13], [16].

The issue of climate change impacting natural and cultural World Heritage properties is very real. For this reason, as a long-term measure, the World Heritage Committee in 2006 requested States Parties to implement the strategy to protect the outstanding universal values, integrity and originality of World Heritage properties from the negative impacts of climate change [1]. Updating management plans of archaeological sites and cultural centers threatened by climate change to ensure sustainable conservation

requires increased research efforts by competent bodies, local actors and universities and the development of joint and regional projects [41].

We still have time to retrieve or save these national theses from oblivion, and here we refer to costume design, scores, props, visual art, the immaterial universe, etc. Although undocumented previously by the records that administer them, these national documents should be part of the National Heritage Register [42]. Virtual representations of tangible culture are related to the two main aspects of the globalization of all (people's heritage) in the quality and cultural audience [43] on the one hand, and to creating other things and growing feelings towards them, on the other hand.

However, another important trend can be supported, which consists in the report of national masterpieces in the world by means of digital databases and virtual collections, museums or registries often connected within larger, regional or global platforms [43]. Researchers have already begun to investigate the impacts of climate change, but there is still a need to complement the existing findings to ensure that they contribute to their prevention and adaptation policies [16], [22]. Our relationship with culture has evolved profoundly over the past 30 years. We are aware that we must strive to protect cultural heritage from the dangers of climate change. The concept of living and heritage, under the focus of the creative economy, is required to be supported by public and private policies in coordinated actions [36].

Many possibilities have arisen from the search, and many are yet to be discovered. Research should further explore how to make cultural heritage an available resource for climate mitigation and sustainable development. In this context, there are opportunities to promote multidisciplinary research and knowledge exchange in several regions. It is vital that research communities across regions collaborate to address the knowledge gaps identified within the document globally and to protect our cultural heritage for future generations [4].

Government, academia, private stakeholders are investing in the various components of culture, creative economy, cultural tourism, museums and other local cultural organizations focusing on specific components of culture. Assessing the links between culture, heritage and responses to climate change will also serve as a catalyst for new research, projects and publications on culture, heritage and climate action. The ecological and social impacts associated with the losses and opportunities for cultural assets and values from adaptation and mitigation should be investigated more intensively [2,] [24].

The management and programming strategy itself, combined with ever-increasing public-private awareness and effective creative industries policies in the socio-economic ecosystem, contribute to integrated synergy and highlight the best shared values [22]. Regarding structural damage, analysis was carried out on recorded climatic data, and damage and damage patients as a result of climatic and catastrophic loads and causes [33]. Elements, objects and sites of cultural history were ranked into five sensitivity categories within their four climate groups. They weather action, floods, landslides and winds. In addition, a scientific reference base was created on mechanical damage and batteries of historical structures due to the effects of weather and it suggested strategy and adaptive measures.

The impact of wind action on historical structures and art objects happens in two parallel ways [21]. Some typical forms were chosen for roofs and historical structures,

the children of the towers of the old town. The three-dimensional model that must be accurate for the investigation of the complex situation and has been validated and calibrated by making test results in the reduced-scale shows in its tunnel. The innovative methodology and the application of hybrid air flow analysis around the complex architectural forms of historical towers achieve a pioneering result in this field [34]. The adopted methodologies also take care of the existing software to change a verified software model of a general cultural building.

The approach was used to model the operation of the effects of climate change on the construction of a building, thus becoming an integral to the internal understanding of the internal structure of the built structure [9]. The simulations present a recent insight into the changes of materials under different conditions [44].

5 Conclusion

The relationship between cultural heritage, in its tangible and intangible dimensions, and climate change has been a topic of significant academic discussion. It reflects the rising challenge of safeguarding cultural heritage and identity in a postmodern society, as well as the challenges from climate changes. Nowadays, more than ever, sites like Durrës and Butrint Amphitheaters, archeological city of Apollonia and other cultural assets facing such problems caused by climate change, need proactive, creative management, bold decision-making and conviction. The recent attention on these cultural artifacts presents attempts in the safeguarding process, due to the transformation of cultural landscapes and the safety of cultural heritage under socio-political, socio-economical, and environmental factors. Cultural heritage is neither prepared for nor adapted to our future climate. Information and related policies are needed on how to make it more resilient to future disasters and how to survive them. Problems and patterns of climate change impacts on cultural heritage in indoor environments should be prioritized.

The changing state of cultural heritage subject to short- and medium-term flooding and long-term flooding should be measured. Good policy, safeguarding strategy, effective training and sustainable practice must all be built on a foundation of scientific research. Cultural heritage is the genetic code of a people that defines who we are as a nation. If we do not document it, protect it from climate damage and transmit it across generations, it is destined for extinction.

References

1. Szmelter, I: New Values of Cultural Heritage and the Need for a New Paradigm Regarding its Care”, CeROArt (Online) (2013), URL: <http://journals.openedition.org/ceroart/3647>.
2. De Luca, G., ShirvaniDastgerdi, A., Francini, C., Liberatore, G: Sustainable Cultural Heritage Planning and Management of Overtourism in Art Cities: Lessons from Atlas World Heritage, Sustainability 12 (3929), (2020), <https://doi.org/10.3390/su12093929>.
3. Bertolin, C., & Camuffo, D: Risk assessment. In J. Leissner, U. Kaiser, & R. Kilian (Eds.), Climate for culture: Built cultural heritage in times of climate change, 52–54, Weltbuch-VerlagGmbH (2015).

4. Broci, E: The “authenticity” of traditions and tourism, 1st International Conference on Cultural Heritage, Media and Tourism, 39-46, Ohrid (2013).
5. UNESCO: Needs-assessment safeguarding intangible cultural heritage in the Republic of Albania, Institute of Ethnology and Folklore Studies with Ethnographic Museum Bulgarian Academy of Sciences, Sofia (2014), <https://ich.unesco.org/en/news/new-steps-for-safeguarding-living-heritage-in-albania-00139>.
6. Labadi, S: UNESCO, Culture, Aid and Development in the New Millennium.” In *The Cultural Turn in International Aid: Impacts and Challenges for Heritage and the Creative Industries*, edited by S. Labadi 73–88, London, Routledge (2019).
7. Knox, H: *Thinking like a climate: Governing a city in times of environmental change*. Duke University Press (2020).
8. UNESCO: World Heritage Centre. Climate change and world heritage. Report on predicting and managing the impacts of climate change on World Heritage and Strategy to assist States Parties to implement appropriate management responses. Paris, France (2007).
9. UNESCO: Meeting strengthens synergies between culture and science for climate action. Paris: UNESCO (2022), <https://www.unesco.org/en/cultural-heritage-7-successes-unesco-preservation-work>, last accessed 2023/01/19.
10. Sesana, E., Gagnon, S., Alexandre, C. Ch., Cassar, J., Hughes J. J: Climate change impacts on cultural heritage: A literature review. *WIREs Climate Change*, Wiley Periodicals LLC (2021).
11. UN-HABITAT: *The New Urban Agenda*. UNESCO. 2010. *The Power of Culture for Development*. Paris: UNES (2016).
12. Labadi, S., Giliberto, F., Rosetti, I., Shetabi, L., Yildirim E: *Heritage and the Sustainable Development Goals: Policy Guidance for Heritage and Development Actors*, Paris ICOMOS (2021).
13. Nocca, F: The Role of Cultural Heritage in Sustainable Development: Multidimensional Indicators as Decision-Making Tool, *Sustainability* 9, 1882 (2017).
14. <https://europa.eu/cultural-heritage/about>, last accessed 2022/12/14.
15. Abu-Ras, W., Senzai, F., Laird, L., Decker, E: The Influence of Religious Identity, Culture, and Values on the Practice of American Muslim Physicians. *Social Sciences* 11: 499 (2022), <https://doi.org/10.3390/socsci11110499>.
16. Barrère, Ch: Cultural heritages: From official to informal, *City, Culture and Society* 7 (2), 87-94 (2016), <https://doi.org/10.1016/j.ccs>.
17. Guzman, P., Pereira Roders, A.R, Colenbrander, B: Impacts of Common Urban Development Factors on Cultural Conservation in World Heritage Cities: An Indicators-Based Analysis, *Sustainability* (10) 853. (2018), <https://doi.org/10.3390/su10030853>.
18. Hodges, R: Eternal Butrint. *Antiquity Book reviews A UNESCO World Heritage Site in Albania, XIV+256...* *Antiquity* 06 (82) 316 (2008).
19. Vlassis, A: Culture in the Post-2015 Development Agenda: The Anatomy of an International Mobilisation.” *Third World Quarterly* 36 (9): 1649–1662 (2015). doi:<https://doi.org/10.1080/01436597.2015.1052064>.
20. Nilson, T., Thorelleds, K: *Cultural Heritage Preservation: The Past, the Present and the Future* Halmstad University Press 9-10 (2018).
21. Halbertsma, M., Van Stipriaan, A., Ulzen, P: *The Heritage Theatre: Globalisation and Cultural Heritage*, Cambridge Scholars Publishing 1-26 (2011).
22. Nik, V. M., Mundt-Petersen, S. O., Kalagasidis, A. S., De Wilde, P: Future moisture loads for building facades in Sweden: Climate change and wind-driven rain. *Building and Environment* 93, 362–375 (2015). <https://doi.org/10.1016/j.buildenv.2015.0>.

23. Phillips, H: The capacity to adapt to climate change at heritage sites. The development of a conceptual framework. *Environmental Science & Policy* 47, 118–125 (2015), <https://doi.org/10.1016/j.envsci.2014.11.003>.
24. <https://bmf.al/wp-content/uploads/2022/05/1-IMP-final-2020-Final.pdf>.
25. European Commission: Commission communication – Strengthening cultural heritage resilience for climate change, Luxembourg: Publications Office of the European Union (2022).
26. Sulaj, A., Themelko, H: Impact of Urbanization to Demographic Changes Occurred in Recent Years in Areas along the Tirana-Durres Corridor, *Anglisticum, International Journal of Literature, Linguistics & Interdisciplinary Studies*, 4 (1) (2015).
27. <https://doi.org/10.3390/su9101882>, last accessed 2023/02/10.
28. Filho, L. Walter: Will climate change disrupt the tourism sector? *International Journal of Climate Change Strategies and Management*, 14 (2), 212–217. Emerald Publishing Limited (2022).
29. Hernandez, D. R: Wet-Site Excavation and Field Methodology at Butrint, Albania: The Roman Forum Excavations Project, *Journal of Field Archaeology* 42:4, 312–325 (2017). doi: 10.1080/00934690.2017.1338511.
30. Doka Dh., Qiriaz, P: The Geography of Albania. Problems and Perspectives. *World Regional Geographical Book Series Springer Nature*; 1st ed. (2022), <https://doi.org/10.1007/978-3-030-8551-2>.
31. Hastrup, K., Skydstrup, M: The social life of climate change models: anticipating nature. Routledge (2013).
32. <https://balkaninsight.com/2018/01/08/floods-worsen-woes-of-albania-s-decaying-heritage-sites-01-05-2018/>.
33. <https://sot.com.al/english/kultura/projektideja-mbi-restaurimin-e-monumenteve-ne-durres-prezantohet-ne-mini-i542229>.
34. Palermo, A., Muse, D., Whitmore, Z., Diefendorf B: Disaster Risk Assessment of Cultural Heritage Sites in Berat, Albania (2017), <http://www.wpi.edu/Academics/Projects>.
35. AADF: Albanian American Development Foundation, Albania (2021).
36. Galeotti, M: The Economic Impacts of Climate Change in the Mediterranean. Department of Environmental Science and Policy University of Milan, IEMed Mediterranean Yearbook (2020).
37. Bozo, L., Bozo, E., Dragovi, A., Winter, M.G., Smith, D.M., Eldred, P.J.L., Toll: Environment and historical monuments in Albania. *Geotechnical Engineering for Infrastructure and Development*, 4229–4234 (2015).
38. Huijbregts, Z., Kramer, R. P., van Schijndel, A. W. M., Schellen, H. L: The impacts of climate change on the indoor environment of monumental buildings. (In *Climate for Culture*, EU-FP7-Project no.: 226873, 1–87, Third Annual Meeting, Visby, Sweden, Technische Universiteit Eindhoven (2011).
39. Phelps, D. F: An Archaeology of Europeanization: Transnationalism, Heritage, and Communities in Post-Communist Albania, Stanford University.
40. Baçe, D: Disertation: Technological Innovations and the Revitalization of Museum Areas Case Study: City of Gjirokaster, Albania, Roman Studies Program, Central European University, Budapest, Hungary (2022).
41. <https://albania.al/arts-and-culture/>.
42. Dollani, A., Lerario, A., Maiellaro, N: Sustaining Cultural and Natural Heritage in Albania. *Sustainability* 8(8):792 (2016), <https://doi.org/10.3390/su808079>.
43. Çuçi, O: Effects of Climate Change on Heritage, Ministry of Tourism and Environment, Albania (2019).

44. Cassar, M: Sustainable heritage: Challenges and strategies for the twenty-first century. APT Bulletin: Journal of Preservation Technology, 40(1) 3–11(2009), <https://discovery.ucl.ac.uk/id/eprint/187>.