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The environmental pollution risks and its impact on cultural heritage

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Abstract :

The environmental pollution significantly affects cultural heritage, due to its adverse impact on historical sites, and cultural monuments through air and water pollution which can cause erosion of historical materials such as stone, metals and wood resulting in degradation, loss of historical, and aesthetic value and air pollution from harmful emissions of industrial sources, Transportation vehicles that pollute historical monuments, and architectural sites and reduces their quality and that the disposal of chemicals and waste in water can contaminate archaeological sites, It damages the historical materials contained therein as well as soil contamination that negatively affects the plants, and trees surrounding the archaeological sites and thus their beauty, and integrity, as well as the accumulation of waste and solid waste near these sites reduce their tourist attractiveness.

we know that these historical monuments, and archaeological sites protect the surrounding environment and reflect the identity, and culture of societies so effective actions must be taken to preserve the environment, and cultural heritage together by implementing strict environmental policies, and promoting environmental and cultural awareness.

Keywords: environmental; cultural heritage; risks ; pollution

Introduction:

When we talk about the impact of environmental pollution on cultural heritage we enter a world with great challenges to preserve our past, and cultural identity the environment and cultural heritage are an integral part of a coherent interaction where environmental pollution can negatively affect cultural monuments and archaeological sites that humankind is protecting and preserving as cultural heritage sites are one of the most important symbols of national and global identity, we must therefore recognize the detrimental impact that environmental pollution may have on these precious sites, preserving regional and global cultural heritage requires adopting comprehensive strategies to reduce pollution and maintain a clean, and healthy environment around these sites and by understanding the complex interaction between environmental pollution and cultural heritage, we can develop sustainable environmental policies and promote awareness of the importance of preserving the environment for present and future generations.

we used the analytical descriptive approach in this study of the impact of environmental pollutants on cultural heritage.

In our study, we addressed the main hypothesis: "Increasing environmental awareness leads to the protection of cultural heritage".

Increasing environmental awareness among individuals, and communities may improve the level of preservation of cultural heritage by understanding the importance of environmental conservation and biodiversity, this environmental awareness can be reflected in efforts to preserve historical and cultural monuments For example, increased awareness of environmental pollution damage to historic buildings can lead communities to take action to reduce such damage and preserve their cultural heritage.

this hypothesis can be achieved by:

- raising people's awareness of the importance of preserving the environment and cultural heritage through awareness-raising campaigns and educational programmes.

- strengthen environmental legislation and policies that promote the preservation of cultural heritage.

- integrate conservation concepts into archaeological, and historical site management plans.

- promote sustainable environmental practices in the maintenance, and restoration of cultural monuments.

- achieving this hypothesis can contribute to building sustainable societies that respect and preserve their history, and culture for future generations.

based on the general hypothesis I have put forward, some sub-hypotheses that reinforce and support this hypothesis can be presented:

sub-hypothesis 1: "Raising young people's awareness of cultural heritage increases their environmental awareness"

sub-hypothesis 2: "The use of technology in heritage documentation promotes environmental awareness"

sub-hypothesis 3: "Community participation in conservation enhances conservation of heritage and the environment"

sub-hypothesis 4: "The inclusion of conservation concepts in cultural education programmes promotes environmental awareness"

those sub-hypotheses reflect how efforts to promote environmental awareness can be expanded and diversified through the preservation of cultural heritage, and how such preservation can positively interact with an individual's and community's environmental awareness.

In the context of the general and sub-hypotheses on environmental awareness-raising and the protection of cultural heritage, several objectives can be identified for research on this topic.

- assess the extent to which increased environmental awareness affects cultural heritage conservation efforts:

- explore how increasing environmental awareness affects levels of preservation of historical and cultural monuments.

- study the effectiveness of environmental awareness programmes on people's understanding of the importance of preserving heritage:

- to assess the effectiveness of awareness-raising programmes in raising people's awareness of the importance of preserving cultural and environmental heritage.

- analysis of methods of preserving cultural heritage and its integration with conservation concepts:

- study how environmental conservation concepts are integrated into methods of preserving cultural heritage and evaluate the effectiveness of this integration.

- assessment of technology's role in promoting environmental awareness and preserving heritage:

- study how technology is used in documenting and presenting cultural heritage and its impact on increasing environmental awareness.

- study the impact of community participation in heritage and environmental conservation efforts:

- analyse the role of community participation in promoting efforts to preserve cultural and environmental heritage and identify best practices in this context.

- achieving these goals through research can contribute to guiding efforts and policies towards enhancing environmental awareness, and safeguarding cultural heritage better and effectively.

from this proposal we suggest the following problems:

How does environmental pollution affect cultural heritage?

to answer this problem, we proposed the following plan, which included:

Topic1: Concept of the cultural heritage and the environmental pollution

TopicII: Manifestations of the environmental pollution on the cultural heritage

THE FIRST TOPIC: The Concept of cultural heritage and environmental pollution

The cultural heritage is a collection of values, practices and knowledge inherited by generations across the ages, where cultural heritage can include important monuments, Traditional arts, traditions, language, music, literature, architecture, traditional clothing as for environmental pollution, it refers to harmful changes in the environment as a result of human activities, such as greenhouse gas emission, water pollution, toxic disposal, deforestation, and we will address these points in two independent demands.

First requirement: The concept of cultural heritage

In this requirement, we will address the definition and legal nature of cultural heritage through two separate sections:

First section: The definition of cultural heritage

The heritage is defined as a set of values with cultural and civilizational dimensions, including scientific and industrial monuments, which form an integral part of the nation's present and its starting point for its future. If we look at the meaning of the word "heritage", it symbolizes the heritage from the past to the future. Everything we inherit from our ancestors and keep to present it to future generations is an integral part of heritage. (Abedlaziz ramadhan elkhatabi, 2014, p132)

It can be argued that heritage as a holistic concept extends to cultural and civilizational values that form the core of national identity as well as scientific technical and industrial developments, which reflect the nation's progress. Interest in heritage reflects interest in the past and present, and charts a way forward by retaining and presenting experiences, and traditions to future generations as a cultural heritage that is respected, and extended over time.

Heritage can also be defined as the science that classifies, and arranges the material remnants of humankind's gatherings based on their functions and history and the framework of their civilization (Osama Hussein Obaid, 2008, p. 10).

this definition can be said to highlight the importance of studying heritage, as a science that contributes to understanding the history of mankind by classifying and arranging the material remains of human populations, thus helping to infer their functions and the framework of their civilization, this approach reflects the interest in peoples cultural and historical heritage, and its role in documenting civilizations and their histories.

There are also those who consider that the concept of heritage is not only legal ethical rules governing people's behaviour, and varying from one culture to another, it is a constant of values that have contributed to the formulation of those rules and that remain constant over time despite the evolution of circumstances and the difficulty in changing them.

this definition can also be said to emphasize that heritage reflects the roots of values and beliefs that form the basis of the laws, and ethics of societies and that heritage constants are an important reference for understanding societies evolution and history, as well as the role of heritage in promoting cultural identity

and the legacy of civilizations, and how it contributes to building cultural awareness.

It can be inferred from these definitions that heritage is not only a set of laws and ethics but also a reflection of the root, values that characterize a particular culture and link it to its history and identity, It is also a set of constants that hold it to reflect the evolution of societies over time, and form an integral part of its history and identity, as well as the promotion of cultural identity intergenerational communication and cultural awareness-building.

the heritage's ability to survive through changes, and transformations shows its strength in transmitting values, and knowledge across generations.

second section: The legal nature and importance of cultural heritage

1/The legal nature of cultural heritage

The cultural heritage is central to a nation's economy, which supports the tourism industry, contains historical information, promotes scientific research is based on legal rights to protect and determine property, and the rules for protecting it vary depending on whether it is public or private money

Algerian law guarantees the title to cultural heritage through article 14 of the national property act which defines public national property, Including natural and artificial property that includes public monuments, and museums in accordance with article 7 of Act No. 08-14, as amended, and supplemented

The national property act accords legal protection to these three properties and article 66, paragraph 2, of the same act establishes general rules for the protection of national property principles of inalienability, non-limitability and non-custodiability.(Dali said,2023,p112,113)

The cultural heritage can be said to enjoy legal protection aimed at preserving it securing it for present and future generations, where the legal nature of cultural heritage varies according to each country's legal system, there are also many special legislation and laws, which set out procedures and mechanisms for its protection and preservation, property rights relating to cultural heritage have been defined to preserve, and ensure that owners' rights are not violated.

2/The importance of cultural heritage

its female:

2.1-The importance of cultural heritage in the legal system

Cultural heritage has a profound moral impact on the psyche of human beings

It is regarded as the true footprint that defines peoples through, the diversity of beliefs and traditions, which vary from one culture to another, cultural heritage is attributable to the past and is considered an inheritance that it enjoys today and is transmitted to future generations or is destroyed as cultural heritage is regarded as part of the human aspect of social, and political life the elimination of legal protection is an objective that raises debate about the rights and interests that society considers to be in need of protection, the legislator balances these multiple interests in cultural heritage, and sacrifices one for the others cultural identity must be justified and based on moral, and legal values that respect the history and cultural identity of peoples(Ahmed mohamed khalifa,1959,p110)

Cultural heritage can be said to be a vital element in the consolidation of identity and social ties, and its legal protection reflects an interest in cultural heritage and promotes awareness of its importance, the balance of the legislature between multiple rights and interests in this context highlights the importance of dialogue and cooperation for the preservation of cultural heritage, as part of the human heritage that embodies the history and identity of peoples.

2.2-The religious importance:

In ancient times societies were due to great importance, associated with religious and civilizational aspects together, and cultural societies respected the arts and artistic conclusions, as a manifestation of spiritual expression and associated these productions with leading religious institutions, and the arts were sacred and closely associated with religious beliefs, so they had to protect and preserve these arts the thought that prevailed in that era, the human spirit was embodied in man's desire to immortalize his achievements, and maintain his legacy for future generations at that time, man created products of stone and metal and erected temples and huge towers, they used various means to secure and preserve these productions, all of which stemmed from their desire to retain spiritual and cultural activity. (Ali khalil ismail elhadithi, 1999, p26, 27)

It can be argued that religious significance highlights the importance of art and culture in ancient societies and how those elements reflected the spiritual and religious expression of the people of that era, It also shows how artistic creativity was considered sacred, and how it was closely linked to religious and spiritual beliefs to ancient societies as we also demonstrate man's desire to preserve his legacy, Its impact on future generations shows how people have invented and created diverse art products, temples and huge structures to immortalize their achievements, and retain their spiritual and cultural heritage.

2.3-The civilizational importance:

Cultural heritage includes tangible material aspects, such as productions old buildings tools and clothing used by former cities, as well as intangible aspects such as beliefs, customs, languages, traditions, etc Preserving these aspects means retaining products that reflect the progress of civilization, and culture for those peoples and communities. (Djamel alian, 1978, p72)

The preservation of cultural heritage, can be said to represent the continuity of historical and cultural ties between different generations, It contributes to understanding the development of societies over the ages, the preservation of the material and intangible elements of heritage contributes to preserving the identity of peoples and societies, and contributes to promoting awareness of the cultural and historical diversity of human kind in general, we can also be argued that civilization reflects the product of mankind's evolution and transformation through the ages, civilization has begun as a product of improved living conditions over time, it has become an essential element of human progress.

The concept of cumulative value reflects the evolution, and continuity of civilization through the ages, where knowledge, techniques and culture accumulate to form the basis of daily life, and the history of humanity in general.

2.4-The economic importance:

Culture and heritage are increasingly important in modern times, at the national and international levels and can have a significant material impact, especially when it is well exploited, especially in the fields of tourism in our current time and it's no longer a secret how artifacts can generate enormous financial benefits. It contributes significantly to various material needs through the promotion of certain different sectors and the development of economies, of a cultural nature. The promotion and stabilization of cultural heritage can contribute to the promotion of local and international attractiveness and fame and thus the development of sustainable economies based on culture, as well as profit from these cultural riches and can have a significant positive impact on the improvement of economic life and the culture of communities, and the opening up of new prospects for sustainable development linked to their long-standing cultural heritage (Moussa boudhane, 2013, p12).

It can be said that we must also bear in mind the cultural, and historical value of heritage, which is an essential part of the region's national, and global identity and that attention to cultural heritage, can contribute to promoting the cultural and historical awareness of society and building strong bonds between different generations.

Additionally, attention to cultural and historical heritage must be a fundamental issue for States in modern times, as these resources are important for strengthening national budgets. and form an essential part of national income sources of caring for heritage, where states can leverage their cultural heritage to promote economic growth and create new and sustainable jobs, and so it shows that investing in preserving and promoting cultural heritage is a smart investment for states. It can bring tangible economic benefits as well as constant respect and appreciation for cultural and historical heritage. (Mahmoud Abd al-Razak, 1995, p 107)

It can be argued that the development of tourism infrastructure can play a crucial role in attracting more tourists and enhancing the tourism experience in general as well as promoting local culture and arts, as it can contribute to making tourist destinations more attractive and distinctive, as well as promoting cultural and historical aspects through events and festivals and this promotes cultural awareness and attracts more tourists.

second requirement : The concept of environmental pollution

We will address in this requirement, the definition of environmental pollution and the causes of this phenomenon, through two separate branches

First section: The definition of environmental pollution

In the second half of the twentieth century, the phenomenon of pollution emerged as an ancient environmental phenomenon whose impact has increased dramatically as a result of the world's scientific and technological progress. Pollution was previously caused by natural phenomena such as earthquakes, volcanoes, wind and floods. But that was to a certain degree and natural factors and cycles were able to restore balance without leaving harmful pollution effects on humans, animals, or plants. (hassan ahmed chahata, p17)

It has been defined as an element or substance that causes a change in the rate of growth of organisms in the environment, which interferes with food chains by introducing toxins, and can affect health, comfort, or community values (mohamed mahmoud dhaiba, 2010, p09)

second section: The reasons of environmental pollution

The causes of pollution are:

1/The human reasons

the environmental pollution varies according to human activities, while intervening in nature, rummen, among these reasons, vehicles of different kinds such as cars, buses, aircraft trains, ships, as well as oil refineries, manufacturing facilities in particular the chemical and petrochemical industry, and electrical power plants by burning coal, oil or natural gas, the causes also include agriculture and animal husbandry, mining operations, in addition to construction and road construction, the use of consumption products and the conduct of various commercial activities. (fouzia souad djalaba, 2022, p614)

It can be argued that different human activities play a significant role in polluting the environment, whether through heavy industry emissions, the use of agricultural pesticides or the discharge of industrial waste, so we should strive to adopt more sustainable environmental practices, and invest in clean technology to preserve the environment.

2/The economic reasons

The industrial development increases the demand for raw materials, fossil fuels which are non-renewable natural resources that negatively affect the Earth's ecosystem, such as soil erosion and groundwater contamination by oil oils and other pollutants (fethi dardar, 2003, p115)

The industrial development can be said to have increased consumption of non-renewable natural resources, negatively affecting the environment by polluting groundwater and soil erosion that necessitates a shift towards the use of renewable resources, eco-friendly technologies to maintain long-term environmental balance and sustainability economic factors play a crucial role in the spread of pollution, development, and environmental decisions are influenced by economic and financial interests in developed countries, and tight laws and regulations can play a role in restricting pollution while in developing countries there may be severe economic pressures, compel the acceptance of high environmental risk pollution industries, highlighting the urgent need to channel investments towards clean ,and sustainable technologies and to strengthen international cooperation to address transboundary environmental challenges.

we also conclude that economic factors play a crucial role in the spread of pollution as development and environmental decisions are influenced by economic and financial interests in developed countries, and stringent laws and regulations can play a role in restricting pollution, while in developing countries severe economic pressures may force the acceptance of polluting industries with high environmental risks, highlighting the urgent need to direct investments towards clean and sustainable technologies.

3/The Social reasons

The population's increase follows an upward pattern that continuously shortens its circles this trend indicates that the future is moving towards a huge situation makes it difficult to meet the basic food, and life needs of this vast population that is massive population growth environment,, where it is one of the most important environmental challenges and leads to painful impacts on the environment, In addition, the impact of any other environmental problem is undoubtedly increasing proportionately as the population increase(rachid elhamed,mohamed said elsabrini,1976,p111)

Increasing population can be said to be an important environmental challenge, as the burden on the Earth's resources and the environment increases significantly and the balance between population growth, The ability of the environment to meet the needs of the population is vital for maintaining the sustainability of ecosystems Strategies must be developed to strike a balance between population growth and environmental sustainability, by promoting sustainable development and raising awareness of the importance of protecting the environment and natural resources of present and future generations.

man has developed a wide range of manufactured materials, which facilitate daily life and save time, effort and money, however, dealing with these critical materials requires effort, knowledge and high costs to deal with the environmental pollution resulting therefrom.(hassan ahmed chahata,p24)

It can be said that the balance between technological development and environmental conservation and despite the benefits of manufactured materials in facilitating life, Improving efficiency, however, the negative environmental impacts of its use to reduce pollution and preserve the environment and natural resources of present and future generations, This requires challenging and finding sustainable solutions and adopting clean technologies to reduce negative impacts on the environment.

THE SECOND TOPIC: The manifestation of environmental pollution on cultural heritage

The impact of environmental pollution on cultural heritage, can be severe and affect many cultural aspects that represent peoples' identity, such as the emission of harmful gases, can erode historical buildings, and archaeological sites, accumulate dust and impurities on cultural monuments, as it can distort them and reduce their aesthetic, and we will address these points in two independent demands.

First requirement:The chemical and biological contaminants

In this requirement, we will address chemical, and biological contaminants affecting cultural heritage through two separate sections:

First section:The chemical pollutants

Air pollution has eroded many metallic, and stone materials used in building, raising serious concerns about the safety of these buildings, and the effects of corrosion and fragmentation and this phenomenon is particularly evident in archaeological buildings dating back to ancient times, Such as the acropolis castle in Athens, Greece and as a result of increased air pollution due to industry during

the second world wars, the marble used to build the acropolis castle was severely fragmented and eroded, in the United States of America, many ancient iron bridges were exposed to erosion and endurance phenomenon as a result of negative environmental pollution.(Abdelali kafaf,touban kazem khadir,1999,p137,138)

It can be said that chemical contaminants such as sulfur dioxide, and nitrogen oxides they pose a significant threat to cultural heritage, negatively affecting historical buildings and cultural monuments as these pollutants erode, and damage ancient structures,whether made of stone, wood or pottery, reducing their historical and aesthetic value, in addition to which chemical pollutants may affect historical paintings and statues, causing damage and change in their original properties.

second section: The biological pollutants

The effects of biological pollutants and dangerous coloring, and damage agents on archaeological buildings are commonly known as biological containment of building materials, where observations indicate that biological damage does not occur separately within a cycle of damage, but is influenced by external factors and forces such as air holders and air pollution.(Mohamed abdelhadi,1996,p227) biological contaminants can be said to include living factors, such as algae, fungi, bacteria and plants that can adversely affect cultural heritage. cultural structures and materials therefore need periodic preservation, and proper cleaning to resist the effects of biological pollutants, and preserve their aesthetic and historical value.

second requirement: The natural pollutants

In this requirement,we will address natural pollutants affecting the cultural heritage,which includewind and moisture,as well as acidic rain and contaminated groundwater, through two separate branches.

First section: The wind and moisture

The wind transfers air pollutants from one place to another, where wind speed increases their impact especially in areas where vegetation coverage is weak, or so the wind carries dust, and sand that cause damage to the surfaces in addition to the transfer of contaminated gases such as sulphur dioxide, hydrogen sulphide gases and carbon dioxide, and the negative wind effects are to increase the speed of evaporation of the water in the inner stones, the faster the wind increases the corrosion and damage process of the surfaces, and for moisture it interacts within the historic buildings ,with air components such as salts and acids resulting in the intensification of water vapour on the walls of the surfaces. surface damage reactions due to easy soluble salts, such as chlorides that remain in the solution and moves based on atmospheric changes, where lesser salts crystallize if on or near top surfaces(fouzia djalaba,2022,p615,616).

It can be argued that the impact of environmental factors, such as wind and moisture on historic buildings is vital to consider as wind transports pollutants and sand which can lead to damage to surfaces, and excess corrosion in addition weather conditions and rain increase the impact of moisture on buildings requiring additional maintenance actions to protect them, where these impacts can be

reduced through improved ventilation, and insulation in historical structures this enhances the chances of preserving, these ancient buildings over time

second section: The acid rain and contaminated groundwater

The impact of rain on historic buildings is very similar to that of moisture in which they cause erosion, and damage to historical structures, whether by saturating stones with water or affecting nearby groundwater, and can leak through fragile roofs to other parts from the building, and its walls, and this is due to the soil absorbing water, and then losing it after the drought period as for the impact of contaminated groundwater, it refers to water that is underground and originates from sources such as rainwater, and rivers in which its adverse impact can be seen on buildings built on riverbanks or near coasts, as well as buildings built on agricultural land, and in old residential neighbour that often lack effective means to drain sanitary water(fouzia djalaba,2022,p617).

It can be argued that emphasis can be placed on the importance of having effective strategies, to conserve historical buildings in the light of growing environmental challenges such as climate change and pollution, so these strategies must focus on adopting sustainable environmental practices, modern techniques for preserving historical structures, and contributing to the preservation of our architectural heritage for future generations.

Finally, we conclude that effective action must be taken to reduce natural, chemical and biological pollutants, and clean up the environment around cultural sites strategies should be adopted to protect, and preserve cultural heritage from the effects of harmful pollutants, and to promote awareness of the importance of preserving this precious heritage for present, and future generations.

among these actions and strategies are:

reduce pollutant emissions and promote the use of clean, environmentally friendly technologies in industries, and transport to reduce pollutant emissions that erode cultural heritage maintaining air, and water quality as well as implementing policies and programmes to improve air quality, and water in areas with important historical milestones, as well as raising public awareness of the importance of preserving cultural heritage, and the impacts of environmental pollutants on it and encouraging participation in conservation efforts

maintenance and restoration operations, use environmentally friendly and harmless materials for cultural heritage

establish mechanisms to monitor the state of cultural heritage, and assess regularly the impacts of environmental pollutants on it

in addition to developing contingency plans to deal with any immediate threats, to cultural heritage due to environmental pollutants, and promoting cooperation between governments, cultural and environmental institutions, and the community to achieve cultural heritage conservation goals, and supporting research and development to develop new techniques, and solutions to protect cultural heritage from environmental pollutants.

Conclusion

Cultural heritage requires joint, and sustainable efforts to protect the environment surrounding these precious historical sites, and environmental pollution has

negative effects, they may be destructive of heritage monuments and sites, which necessitates addressing these challenges, and through enhanced awareness of the importance of environmental conservation, and sustainable environmental practices, we can reduce the harmful impacts of pollution on cultural heritage and ensure the continuity of these cultural tributaries for future generations so we must all work as individuals, communities and governments to promote awareness of the importance of preserving cultural heritage, The environment and taking the necessary action to reduce pollution, and promote sustainability and caring for the environment is not only an individual responsibility but our collective duty to protect our cultural heritage, preserve its aesthetic and magnificence for future generations.

Finally, we made a set of recommendations:

1/promoting environmental and cultural awareness: sustained efforts must be directed towards educating people about the importance of preserving the environment and cultural heritage, and the impact of pollution on them.

2/Adopt sustainable environmental practices: institutions and individuals should follow strict environmental principles to reduce pollution and preserve the environment around cultural sites.

3/Cooperation and partnerships: cooperation between governments, and communities must be strengthened to implement joint strategies to protect cultural heritage from the consequences of pollution.

4/Developing effective environmental policies: governments should take legislative and administrative action to preserve the environment and cultural heritage, and promote sustainability.

5/Research and innovation: scientific research, and innovation must be supported in the fields of preserving heritage and reducing environmental pollution to develop effective, and sustainable solutions.

these recommendations can be effectively taken, and implemented, so that tangible progress can be made in protecting cultural heritage ,from the impacts of environmental pollution and ensuring its sustainability for present, and future generations.

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