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GÖRSEL KİRLİLİĞİN TURİSTİK VE TARİHİ ŞEHİRLERİN BOZULMASINA ETKİSİ; ESKİ SANA'A/ YEMEN ÖRNEĞİ

Visual Pollution's Effect on Distorting the Touristic and Historical Cities: Old Sana'a /Yemen Case

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ÖZ

Görsel kirlilik birçok toplumun karşılaştığı büyük sorunlardan birtanesidir ve diğer kirliliklerden (gürültü kirliliği, hava kirliliği vb.) daha az tehlikeli olmayan bir türdür. Birçok Yemen şehri medeni, kültürel ve turistik bir karaktere sahiptir, ancak yine de simge yapılarını ve kültürel bağlamını bozan bir görsel kirlilikten muzdariptirler. Bu çalışma da, bu kirliliğin tezahürlerinin, halkın bilinç düzeyinin düşük olması ve kişi başına düşen gelirin sınırlı olması nedeniyle arttığı tespit edilmiştir. Ayrıca bu çalışma, diğer çalışmalara göre eski San'a şehrinin (OCS) görsel kirliliğinin tezahürlerini tartışmış ve binaların yeniden kullanımı ve restorasyonu yoluyla tarihi ve turistik kimliğini doğru bilimsel standartlara ve uygun bir şekilde restore etmeye çalışmaktadır. Alanda görsel kirlilik nedeniyle büyük bir estetik kaybı yaşanmakta ve bölge halkı ortak değerlerin kaybolmasını ve tek topluluk dokusunun korunmasını istemektedir. Sonuç olarak çalışma, önerilen stratejiler ve tavsiyeler, görsel çarpıklıkların yayılmasını sınırlamaya ve görsel çarpıklıkların bir sonucu olarak eski Sana'a şehrinin mevcut dengesizliklerini ele almaya odaklanmıştır.

Anahtar Kelimeler: Görsel Kirlilik, Eski Sana'a Şehri, Kentsel Bağlam

ABSTRACT

Visual pollution is a big problem faced by many societies, and it is a type of pollution that is no less dangerous than other pollution (such as noise pollution, air pollution, etc.). Many Yemeni cities have a civilized, cultural, and touristic character, but they still suffer from a serious problem, which is visual pollution that distorts their landmarks and cultural context. The study found that the manifestations of this pollution increased as a result of the low level of public awareness and the limited income per capita. This study discussed the manifestations of visual pollution of the old city of Sana'a (OCS), according to other studies, and work to restore its historical and tourist identity through the reuse and restoration of buildings, according to accurate scientific standards and in a civilized manner. There is a great loss of aesthetics in the study area due to visual pollution, and the people of the area feel the loss of common values and the preservation of the single community fabric. The proposed strategies and recommendations focused on limiting the spread of visual distortions and working to address the current imbalances of the old city of Sana'a as a result of visual distortions.

Keywords: Visual Pollution, Old City of Sana'a, Urban Context

1. INTRODUCTION

The contemplation of the architectural style of ancient cities motivates any researcher to know and analyze the visual quality. Visual pollution distorts the architectural structure and obliterates its long history and the beautiful construction of buildings, as they belong to

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different centuries of time. In addition, these cities and the way of life of their inhabitants must be examined and studied by examining modifications of building sizes, shapes, color, height, and design (Chmielewski,2020). For a long time, the *Old City of Sana'a* became a cultural and historical meeting place for Greater Yemen. It is the civilization and cultural gateway to Yemen and reflects the cultural identity of all the Yemeni people, due to its various customs, traditions, and social norms, which gave it this beautiful status among the capitals of Arab countries. Therefore, observing the chronology of the ancient buildings in Sana'a leads us to the historical times of the Yemeni civilization. It is a matter worth looking into since the first construction of the city. The *Old City of Sana'a* represents a unique and beautiful lifestyle such as living, commerce, recreational activities, providing social services, especially the education and health system. The visual quality of cities must be enhanced and considered as a window to host the cultural identity and self-respect of their residents (Haidar and Talib,2015).

The *Old City of Sana'a* is distinguished by its ancient history, which consists of a distinct geographic and cultural blend, in addition to multiple stages of urban and political development. It is the largest Yemeni city and the capital of the Republic of Yemen. On a high plateau lies the city of Sana'a, rising about 2,300 meters above sea level. surrounded by a series of mountains, the most important of which are the mountains of Noqum and Aiban. The city is among the highest cities in the world above sea level (Soltanzadeh and Moghaddam,2015).

The city of Sana'a is considered the largest and most populous city in Yemen, as well as being considered the administrative center of the Republic and its most prominent historical center. UNESCO announced the inclusion of the *Old City of Sana'a* on the World Heritage List in 1984. This part of the city - which has been devoid of any changes for centuries - is characterized by a unique cultural and architectural heritage that reflects the preservation of the traditional fabric and the historical uniqueness of the city of Sanaa. However, the pattern of modernity and development that followed the year 1970, in addition to the factors affecting the forms of urban and population sprawl, all of which led to the expansion of the *Old City of Sana'a* outside the boundaries of the old city, which led to the emergence of a state of competition for resources between the old city and the newly emerging regions. The city's unique heritage also makes up an important factor in increasing tourism rates, thus contributing to significant growth in local economic development rates (Meskell and Isakhan,2020).

To diagnose the problem of the study, there are many problems besides visual pollutants that occur due to a defect in the treatment of old places, such as crowded neighborhoods, shortcoming in infrastructure, and the random distribution of city services lead to a deterioration in the quality of life there. As a result of the policy of random restoration of some buildings in the *Old City of Sana'a*, visual pollution appeared as the last reflection of the random urbanization in the city. In our study, the main motive for choosing the city of Sana'a in general and the *Old City of Sana'a, in particular,* is the *Old City of Sanaa* is wealthy in archaeological remnants and entities of heritage architecture. The existence of a strategy to eliminate visual pollution will improve the visual quality, and thus will seem positively on the quality of life of the residents. This strategy will work to attract all kinds of investors on the commercial and tourism levels, and thus the Yemeni economy will recover. This study also

aims to diagnose and know the manifestations of visual pollution in the city, and the factors that led to the deterioration of the visual quality in it and work to improve them through the positive impact on the quality of life of the local population in the city. Our study distinguishes that it is one of the few and rare studies that dealt with visual pollution in the *Old City of Sana'a*, and it will be a basic base for many future studies and extend a helping hand to researchers.

A figure showing the location of the Republic of Yemen on the world map

2. LITERATURE REVIEW

2.1 Visual pollution (VP)

In the middle of the twentieth century, the term visual pollution (VP) appeared, and research began with it for specialists. This type of pollution was preceded in the literature by pollution in water and air (Nagle,2009). Laws and legislations that limit noise pollution and other pollutants and their harmful impact on the environment appeared in the seventies. In the same period, *visual pollution* was recognized, and it was the responsibility of government agencies and bodies (Jensen,2014).

In the sixties, the first real discussion of visual pollution and the distortions it causes to the environment, then the discussion developed into rules, laws, and strategies for protecting the environment from visual pollution (Portella,2016). One of the first schools of thought in this regard developed a definition of intellectual pollution as pollution that harms a person's eye and places of existence and has psychological, physical, and mental effects on the person, also to its negative effects on the economic and social aspects of society (Nami et al.,2016). Visual pollution is a collection of disturbing, ugly, and uncomfortable elements for societies (Azeema and Nazuk,2016). While Nami et al. (2016) point out that *Visual pollution* is an unorganized and uncomfortable diversity in form and content, brightness of lights, interference of colors, and other heterogeneous elements that create a non-urban environment and landscape. Chmielewski et al. (2016) quote the definition of *Visual pollution* as a set of elements of chaos and disturbance as well as distorted graphics of the environmental and urban corridor. Nessim, (2020) indicates that *Visual pollution* is a great negative force that the visual pollution object (VPO) sends on nature with its various landscapes. There is a strong declaration by the Supreme Court of the United States of America about pollution, and it said that pollution is not limited to what a person breathes or drinks, it may go beyond harming a person's eye or ear (Rosencranz & Jackson,2003). It is a

distortion of any seen on which the human eye falls, and when looking at it, he feels psychological discomfort, and we can also describe it as a kind of lack of artistic taste, or the lack of beauty in everything around us, whether buildings, public squares, or roads (Wakil et al.,2021). The crowded roads, cars cluttered in a mall, wrecked cars, buildings using poor materials, fences, old huts, and graffiti as manifestations of the *visual pollution* (Atta, 2013). *Visual pollution* is defined as the disappearance of aesthetic appearances, and a distortion of any seen on which the human eye falls, which makes him feel psychological discomfort when looking at it, which is described as a kind of lack of artistic taste (Barroga et al.,2021).

There are studies that have categorized *visual pollution* distortions into aggregates which are (a) surfaces of different media and advertisements (bills, commercial posters, and signs), (b) vehicles and cars (congestion, parking, and bicycle parking in some wrong places), (c) audiences (business, education, tourism), (d) temporary events (entertainment, celebrations and special occasions), and (e) random barriers (fences) (Mohamed et al.,2021).

In a study by Portella, (2016), he concluded in his results that the main reason for the deterioration of historical cities and their separation from their past is visual pollution. And that urban progress helped the emergence of separate elements of the environment, the most important of which is the character of the place.

Fang et al. (2021) point out thatevaluating the visual sensitivity of historical cities into four levels: places with high sensitivity, medium, low sensitivity, and very low sensitivity. The study focused on the multi-criteria evaluation (MCE) in three main points: visibility, number of potential users, and beauty. The results indicate that the assessment of the visual sensitivity of the landscape in historical areas is very accurate in the ability to make a decision for planning and protecting historical cities and residential neighborhoods from any neglect. The higher the level of sensitivity of old neighborhoods and buildings, the more important it is to protect and preserve them; The more potential users there are, the higher the level of visual sensitivity, and so on. More attention should be given to the planning and design of ancient cities to improve the visual quality.

Yilmaz and Sagsoz (2011) confirmed in their study that *visual pollution* is the number one in terms of its danger to historical cities and that the physical structures and historical accumulation of historical and tourist cities exacerbate the problem of *visual pollution* in them.

2.2 Urban context

In the urban context, visual pollution is the main problem that directly affects the environment. Visual pollution changes the aesthetics of cities and their architectural and urban style, so we notice those buildings that are not harmonious and heterogeneous with each other, which negatively and clearly affects the general view of cities. Urban urbanization and construction and restoration regulations for historical cities and the buildings located in them, lead to visual pollution and complete inconsistency of the urban fabric (Ahmed et al.,2019).

We define the term ‘VPOs' in an urban context to refer to all manufactured objects, as well as their physical qualities (location, look, size, color, view and, etc.) which has a significant impact

on the visual quality of the urban context of the city. The concept of urban visual pollution expresses the poor physical condition of a different group of things that have a direct impact or indirect relationship with the built environment's quality, which has consequences for the people who live there (Cercleux et al.,2016).Visual pollution objects (collectively or individually) have been shown to affect human health (Jana and De,2015),as well as distract drivers, particularly on major highways(Wakil et al.,2019), giving a distorted image of places, causing a disturbance and devaluing public property, in addition to blurring the identity of tourist and archaeological sites (Müller et al.,2020). In terms of distance, the best visual quality of distance has a strong correlation with the safe behavior of local people, and then with communities more broadly (Torkhani et al.,2012).

Care must be taken when differentiating between the concept of visual pollution and the concept of area disturbance. *Visual pollution* is formed through a set of material elements, while area disturbance is a set of noticeable physical and social characteristics that refer to neighborhoods and work to collapse the social system and quality of life. Examples of disorder of places and neighborhoods are the large number of adult loafers, drug smuggling, violence, fierce fighting in the streets, and brothels, in addition to a host of other physical attributes that exist such as abandoned and abandoned cars, empty buildings, or garbage scattered in the alleys (Abdelhamid,2018). The visual quality of public and community areas, which includes regularity, order, beauty, symmetry, and simplicity, is closely linked to visual pollution (Ibanga and Ebitimi,2021).

A study by Galčanová, L., and Skorová, D. (2015). The purpose of this study was the interaction of the elderly with the urban environment around them on a daily basis, the results study shows the ability of the elderly to exercise their daily activities within the limits of their economic resources with the urban environment that surrounds them, which is changing rapidly as a result of the tremendous technological progress.

2.3 Old city of Sana'a (OCS)

Sana'a was established in a 2,200-meter-high mountain valley and has been inhabited for over 2,500 years. The city became an important location for the spread of Islam in the seventh and eighth centuries. It kept a religious and political tradition that may be seen in the 106 mosques, 21 hot baths, and 6,500 houses that date back to the eleventh century. The city's beauty is enhanced by the multi-story tower residences and the antique brick buildings. The (OCS) is a walled city, which represents one of the ancient cities that have been continuously inhabited for more than two thousand years, and is characterized by its ancient architectural style, which reflects the different architectural styles used in the *Old City of Sana'a*. The cultural structure of its ancient inhabitants who settled in it, namely the Yemeni, Ottoman, and Jewish populations. Public and private edifices were built on one style using refractory bricks or stones, as the country is characterized by an abundance of building stones that are resistant to moisture and climate change, in addition to their flexibility, whether by expansion or contraction during construction. The achievement of water resistance through the use of lime plaster also contributes to ensuring the long-term sustainability of the buildings (Al-Abed, 2011).

In 2004, the city of Sana'a was chosen as the capital of Arab culture. The city is characterized by its vertically built residences in the style of towers, which are usually inhabited by one family. The heights of dwellings vary according to the classification of their ownership, as the heights of the dwellings owned by Jewish families did not exceed three floors, four floors for Ottoman dwellings, and six floors for dwellings of Yemeni families. There are many houses that were built on external agricultural lands at varying heights, which gave them the old architectural style, which is characterized by the beauty of its harmonious architectural design, the distinctive stained glass windows, and inscriptions, which represent a unique architectural heritage. It was classified as a World Heritage City in 1986. In the period between 2001 and 2004, one of the Dutch projects worked on preparing a strategy for preserving the city and preserving its heritage in which the principles necessary to preserve the features of the *Old City of Sana'a*. were established despite its expansion outside the old walls, which also includes some old neighborhoods (Lamprakos, 2016).

The history of *Old City of Sana'a* goes back to the Middle Ages, and the city is distinguished by its mud wall, where the height of the wall ranges between 9 and 14 meters. It is also home to more than 106 mosques, 21 saunas, and more than 6500 homes. In addition to its distinctive architectural style, it is also distinguished by the presence of some important landmarks such as Bab al-Yemen, which is the main gateway to the walled city. Among the gates in the city is Bab Shuoub. The current building facing south dates back to the first Ottoman presence, is the most decorated wall in the city. Not far from Bab al-Yemen is the Great Mosque, which is considered one of the ancient mosques, with local origins dating back to the early Islamic period (Mohsen, 2019).

According to Al-Ahnomi (July 14, 2021), the GOPHCY conducted research (2017-2019) to examine the state of Old City infrastructure, which was sponsored by UNESCO and the EU. Water, sanitation, roads, power, and communication were all determined to be entirely or mostly obsolete. The sewage system has outlived its useful life, and it hasn't been modified since 1982. The water network, which has approximately 6,900 connections and serves approximately 50,000 people (about seven persons every family), is outdated and was unable to supply water since 2011. In 1984, a project to pavement roads in (OCS) began with the goal of helping to maintain the city's architecture by diverting rainfall away from the foundations and preventing them from settling. The roads in the Old City, on the other hand, have been severely damaged due to ruptures and leaks in the water and sewage networks. Approximately 66 percent of the Old City's main and secondary streets have been damaged in some way. One of the most serious hazards to historic Sanaa structures is catastrophic water leaks from the subsurface network. Because the main water pressure has been low since 2011, residents have dug into the roads to link their own pipes to the water network in order to supply their homes with drinking water; this has resulted in leaks, which have harmed building foundations and road conditions. Most sections of Yemen have been without electricity and since the start of the war, including Sana'a's Old City. Many residents have turned to generators or solar panels for power, resulting in a tangle of haphazard electrical wires that deform the city's appearance and streetscape.

2.4. Manifestations of (VP) in the (OCS)

Every unappealing appearance is considered visual pollution. Your eyes will be alienated from this awful image, unlike the bad aromas that rise from the waste placed in the street, when your eye lands on a large or little gathering of garbage on the street and there are numerous cats and dogs hunting for anything to eat in that gathering. One of the worst manifestations of visual pollution in the city is also the unorganized slums, and they cause many environmental, health, and aesthetic problems, as they distort the aesthetic appearance of cities and lose architecture value (Anwer and Aowais,2019).

The poor urban design of some buildings, whether in terms of spaces or the shape of their construction, electricity distribution poles in city streets, street lighting poles with heights inconsistent with the streets, garbage collection boxes of various shapes and sizes, construction and demolition waste scattered between buildings and public squares, and various paint facades are among the reasons for the spread of visual pollution in Sana'a's old city (Ali and Al-Hashimi,2018).

3. THE STUDY METHOD

The study relied on a literature review and previous studies to achieve its objectives. It focused on visible pollutants in the historical and touristic city *Old City of Sana'a*, streets, squares, and public places. The researchers also relied on photographic documentation of some buildings in the old and touristic neighborhoods in the city. The visual distortions of the city were then discussed and classified. The main objective of this study is to identify the causes of the spread of visual pollution in the old Yemeni cities (OCS as a model) and to find proposed solutions to reduce these causes. This study is considered qualitative, as it contributed to the characterization of the most important visual pollutants and ways to deal with them in the *Old City of Sana'a*.

4. RESULTS

4.1. The Random Places

Slums represent an unorganized residential area that was mostly built without a license by local residents who depend on themselves to obtain housing. These dwellings may lack the most basic elements of a decent life. Statistics confirm that 50% of the housing in the third world is built by self-efforts. Slums is a humanitarian and social issue that includes a large number of people in third world countries (Rajab, 2017).

The Ministry of Public Works and Roads worked on preparing the assessment of the slums in the city in the period between 2007-2008, in cooperation with the Municipality of the Capital. Through one of the studies, a total of 35 slum areas were identified throughout the city and on its outskirts, most of which arose during the period Between 1990 and 1995 (a total of 23 areas) on state-owned land settled by residents returning after the Gulf War or immigrants from rural areas, low-paid government employees, and other low-income segments of society. Most of these areas are also located on private agricultural lands and on the neighboring mountainous areas, where four of those areas originated near the sites of rain streams, which are subject to flooding from time to time, as they were classified as potential disasters areas. The population of slums in Sana’a city reached about 37 percent by 2013.

These areas witnessed a further expansion in 2019 and became stable for large numbers of internally displaced people and those who flocked to the city from other governorates. These areas have not been included in any official plans, in addition to their apparent lack of basic facilities and services, in addition to their lack of roads, water supply, schools, health facilities, and public transportation services. Electricity is also connected to informal housing in violation of the law. On the contrary, it has been observed that high-class housing inhabited by wealthy tribesmen has spread in some mountainous areas located in the Faj Attan neighborhood outside the city limits (Al-Daily, 2013).

4.2. Adaptive Reuse

In the *Old City of Sana'a*, the adaptive reuse of houses has become very common. A study by UNESCO (2008) revealed that there has been a significant increase in the adaptive reuse of old Sana'a buildings, which in turn changed the urban fabric of the general historic character of the city (Pini, 2008).

Before carrying out any restoration of historical buildings, it is necessary to know the structure of the building and the historical period to which it belongs, and thus provide the appropriate materials to restore this building and protect its authenticity and cultural status for future generations. Article No. (21.1) of the International Charter states that there is a possible acceptance of adaptation in the event that restoration works for historical buildings do not have a significant impact, meaning that the impact of the works is small on the historical and cultural importance of the place. Article No. 21.2 stipulates that adaptation should include the minimum change during restoration in the basic building materials, and this is only discussed after considering all alternatives. Therefore, evaluating suitable alternatives for restoring historical buildings is very important to preserve the original character of historical cities (Loganina et al.,2021).

Few of the precise definitions that dealt with the subject of (adaptation) during the renovation of historic buildings, Douglas (2002) showed a deep and clear definition of building transformation and construction saying "the modification of the building and its proper use by the person in it who wants to benefit from it". While Latham (2000) defines it as "a process that does not cause any damage to the originality of the building and with a high performance of the studied standards."

Adaptive reuse revolves around the idea of changing the original use. Building interventions such as "renovation," "refurbishment," "remodeling," "reinstatement," "retrofitting," "rehabilitation," and "recycling" should all be integrated. Adaptation, on the other hand, is defined by Pintossi et al., (2021) as "rehabilitation, remodeling, or restoration operations that do not always include modifications of use.

There is confusion between the concept of renovation and restoration of historical buildings, and in fact, the difference between them is that renovation is the process of improving a cracked, damaged, or old building, taking into account all current conditions and standards. While restoration is the process of returning the building to be restored to its original beauty, as it was originally built for the first time. Renovation contributes to increasing the useful life of historical buildings. Although the useful life of a building is extended, renovation does not involve a change in use." Renovation does not include a change in use, but it does extend the

useful life of the structure." Historical buildings will have some useful life that can be extended by adaptation, resulting in their sustainability through a combination of enhancement and preservation (Haidar and Talib,2015; Alexander Newman,2021).

4.3 Adaptive reuse projects in the (OCS)

After UNESCO designated the *Old City of Sana'a* as a world-historic site in 1984, the practice of building conservation began in Yemen. The international community got interested in preserving the unique heritage. *The General Organization for the Preservation of Historic Cities in Yemen (GOPHCY)* is the official Yemeni government entity in charge of the protection. According to Haidar and Talib (2015), the conservation practices in Yemen can be divided into two categories:

1. Projects funded by the government: These are divided into two categories: first, collaboration with international organizations, which is the most usual practice, particularly for historically significant places, either as full funding or partial financing. Second, the old city of Sanaa was a GOPHCY conservation project that included the establishment of action plans and guidelines with the help of UNESCO and UNDP. In addition, certain foreign embassies have raised funding for the upkeep of the *Old City of Sana'a* buildings. GOPHCY only takes on a few projects due to a lack of resources, whereas The Social Fund and Development, as a municipal body, has a pool of funding from many sources.

2. Houses of private ownership or investors: Due to a large number of private houses, especially in the region of Bab El Yemen in *Old City of Sana'a*, this is regarded as a common practice. The owner funds the project, while the authority approves and oversees the building conservation work. (Miles, 1984) uncovered a few difficulties, including local contractors not adhering to international standards and a lack of understanding on the part of architecture organizations. It's worth noting that it's still not being followed today. The issues of maintenance and modernization that were examined in the study of tower residences were reported.

There are criteria to preserve the style of the old buildings, which must be taken into consideration, such as choosing the appropriate quality of materials and their compatibility with the old structure to be restored. In addition to taking into account the modern elements and not including them within the old fabric of the building. The local residents must adhere to an effective strategy to preserve the buildings in their old style. The researcher (Lamprakos, 2005) contributed to the formulation of specialized concepts that distinguish between old and new construction, and to provide a critical framework for preserving these buildings, adhering to accurate standards during change, and preserving the aesthetics of ancient cities. The researcher relied on generalizing these criteria on previous studies conducted in ancient Yemeni cities. And work to rationalize the old building and preserve its originality (Lamprakos,2005)**.**

4.4. The conservation and adaptive reuse guidelines in the (OCS)

With the agreement of the Council of Ministers, a Constituent Declaration was made on the 8th of May, 1979 in order to enlarge and specialize more on the *Old City of Sana'a* in favor of its rich culture and architecture. On December 15, 1984, the first Constitution Act was published, with rules established in accordance with international standards. The GOPHCY

drafted the most recent Conservation Act in 2000. The Minister of Culture and Tourism issued a Ministerial Decree (number-204) establishing standards and policies for development in the *Old City of Sana'a*. The house's outside façade was to be preserved in its original condition, according to modern conservation principles and criteria. A maintenance handbook is also included in the instructions. Article 5-11 makes it illegal to change the use of a building without the GOPHCY's consent. Penalties will be imposed for non-compliance with the Acts. In practice, however, neither house owners nor on-site inspectors offer or refer to the conservation guidebook. The Authority must establish and enforce the manual in order to ensure that building restorations are carried out correctly. The Conservation Act is also insufficiently specific to address all of the relevant aspects of environmental protection (Haidar & Talib,2015).

5. CONCLUSION

According to the discussion of the results and previous studies above, the *Old City of Sana'a* suffers from visual pollution that has led to a loss of aesthetics, and the people of the region feel a loss of common values with this great history. In general a. Visual pollution is a threat because of its relationship with *Old City of Sana'a*. The area under study is It is a bustling area that is active from morning to evening, with people utilizing it at all times for its cultural representation and economic importance. As a result, it is critical to have a thoughtful design for the area that ensures the comfort of users while using the city activities. b. The loss of beauty and the collapse of aesthetic considerations in the city, on the other hand, deteriorates the general taste of buildings, leading to acceptance of the ugly image as dominant, and the conclusion that the structures of *Old City of Sana'a* have no artistic taste. c. Visitors will never find the old quarters appealing, and investors and entrepreneurs will have to hunt for another lovely urban setting in which to set up shop. Because of the city's historical significance, investors like to invest in the *Old City of Sana'a* markets. d. Some areas of the city, such as ancient buildings and alleys, have obvious visual pollution. There is a clear deterioration and randomness when rebuilding, using, or restoring buildings in old Sana'a, in terms of building characteristics, color consistency, quality of materials used, and the external shape of the building structure, which is visible and important for the eye. In addition to the materials used to cover the facades of old buildings. All of this randomness leads to a lack of harmony between the eye and the view. In addition, the essential point, which is that visual pollution in the *Old City of Sana'a* occurs as a result of the low level of public awareness and the limited per capita income.

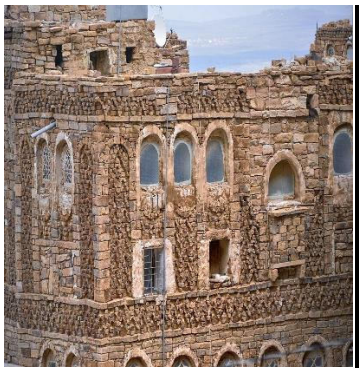
6. RECOMMENDATIONS

When researched, the phenomenon of visual pollution in historical and tourist cities is one of the most complex environmental issues. As a result of the rise of visual pollution and the deterioration of the urban environment, tourist and historical cities have lost their historical identity and distinctive architectural character, resulting in the loss of their historical identity and architectural character. The most common scenes of visual pollution in the *Old City of Sana'a*: the dissonance of building facades and their colors, different covering materials and architectural styles, poor urban planning, and adjacent uses within cities, poor coordination in the implementation of multiple service projects, the random spread of vending vehicles and street vendors, and finally the spread of advertising and commercial billboards randomly. As

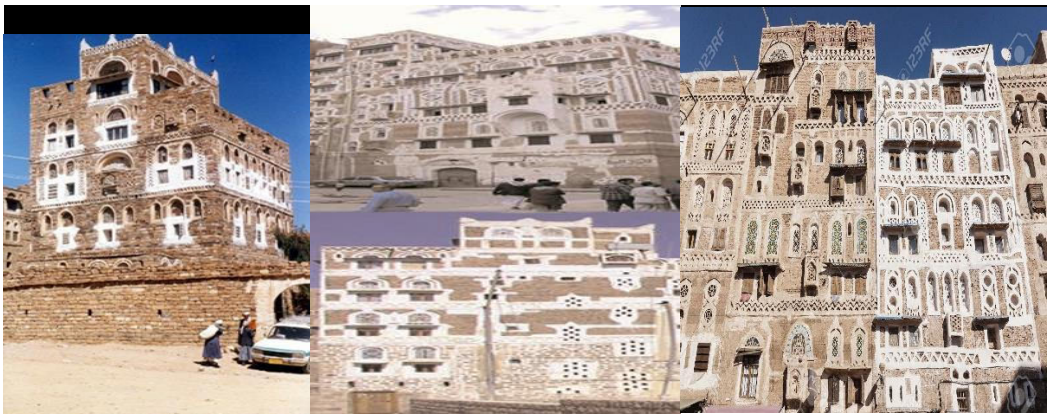
a result, all interested parties, including the local community, relevant authorities, and research institutions, must work together to address the deterioration of the visual image of Sana'a's ancient city. We propose four steps to improve the urban landscape of the *Old City of Sana'a*, which are important steps to ensure the elimination of visual pollution in the city (these suggestions can be generalized to other Yemeni cities of a tourist and historical nature). These steps are as follows; Conducting a comprehensive examination of all manifestations of visual pollution in the *Old City of Sana'a* by the competent authorities, then coordinating among them to study and discuss all manifestations of visual pollution, then develop programs and solutions regarding all manifestations of visual pollution, and finally submit what is reached in this regard to the relevant ministries.

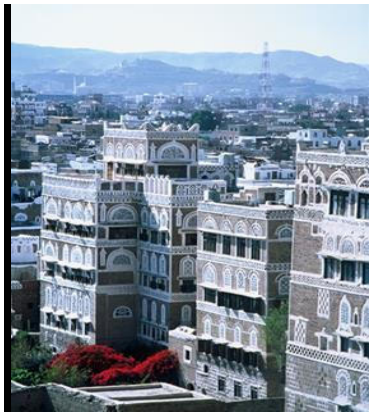
There is also a set of proposals to reduce the visual pollution that scratches the beauty of the city of Sana'a, namely: the responsible authorities should establish strict laws that obligate the city's residents to implement them in order to reduce visual pollution. Work on afforestation of alleys within the city in order to give a beautiful shape to the street. Unifying the shape of balconies and facades of buildings to reduce heterogeneous views. Imposing fines on anyone who randomly throws waste into residential neighborhoods. Attempting to solve the sewage problem in the neighborhoods, and this will eventually reduce visual pollution. The municipality administration should increase the number of workers in cleaning operations, and increase the number of containers in order to reduce the spread of waste. Preventing animal grazing in residential neighborhoods, and working to get rid of loose animals (dogs) in cooperation with the Ministry of Health. Educational courses and seminars should be held to explain to people the importance of the city's beauty and how to preserve it in order to reduce pollution and all its forms. Paying attention to the historical and archaeological buildings in the city and trying to restore them in a way that suits the city’s shape, without compromising the shape and history of these buildings, by providing an architectural and construction guide with comprehensive and modern standards by the competent authorities, and using it during the reconstruction, restoration, and maintenance of historical buildings and tourist attractions in the city. Opening scientific departments in Yemeni universities, such as planning and urban design, and qualifying the people of the country in this field. Trying to find solutions to the problem of intermittent electric current, so that we can get rid of the generator wires that are spread in all residential neighborhoods or organize the generator wires so that they do not cause a disturbing view. Work to extend all electrical wires underground, as in developed countries, and to get rid of the electricity poles that spread in the city causing visual pollution, or work to unify the height of the lighting poles to form an aesthetic appearance of the *Old City of Sana'a*.

Appendix of the study







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