

# **The Conservation of Heritage as a Means for Sustainability, The Case of the Ottoman Town, Alexandria, Egypt**

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## **Abstract**

Sustainability is one of the main concerns that face the world today. The use of non-renewable resources has been the focus of attention lately. With the increase of world's population and the rise of the standard of living in developed and some developing countries, the use of non-renewable resources has increased drastically over the past few decades. The wise use, reuse and recycling of existing resources are imperative. Architecture in particular should follow this current trend. Over the past few decades many architects realized the importance and significance of architecture in achieving sustainability and reducing the use of non-renewable resources. The purpose of this paper is to study the opportunities for conservation and sustainability to work mutually to reach profound achievements. The paper consists of a theoretical study that discusses the interrelationships between architecture and sustainability, and between conservation and sustainability. A case study is introduced to illustrate the application of integrating heritage conservation and sustainability. The last part of the research investigates the case of Alexandria's Ottoman Town where its buildings are analyzed in terms of conservation and sustainability.



## 1. Sustainability in architecture

Architecture is one of the main domains that consume a huge amount of non-renewable resources and energy. Architecture consumes considerable amounts of material and produces large amounts of disposables and wastes. Therefore, achieving sustainability in architecture is one of the main challenges architects face today.<sup>1</sup> On the other hand, sustainability is an over-arching process for all human activities. Sustainability is a process that binds the well-being of people and the ecosystem into a mutually supportive whole. Sustainable development, as reported by Brundtland<sup>2</sup>, is a development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Therefore, sustainable development is a potential component of sustainability.

Sustainability is comprised of three dimensions that if achieved, will result in human well-being. (Figure 1). These are economic, social and environmental dimensions.<sup>3</sup>

The economic dimension of sustainability is concerned with:

1. Creation of new markets and opportunities for sales growth
2. Cost reduction through improved efficiency, reduced energy and raw material inputs
3. Creation of more added value

The social dimension of sustainability is concerned with:

1. Worker health and safety
2. Impacts on local communities and the quality of life
3. Benefits to disadvantaged groups, e.g., people with disabilities

The environmental dimension of sustainability is concerned with:

1. Reduction of waste, affluent generation and emissions to environment
2. Reduction of the impact on human health
3. Use of renewable raw materials
4. Elimination of toxic substances

Sustainable buildings aspire to achieve quality in all of the economic, social and environmental dimensions. The rational and wise use of building materials and the total management of the construction process contribute to safeguarding scarce and non-renewable resources and reduce the consumption of energy. Therefore, sustainable architecture has three principles:<sup>4</sup>

1. Reducing the consumption of non-renewable resources
2. Celebrating natural environments

3. The reduction or elimination of the use of hazardous building materials.

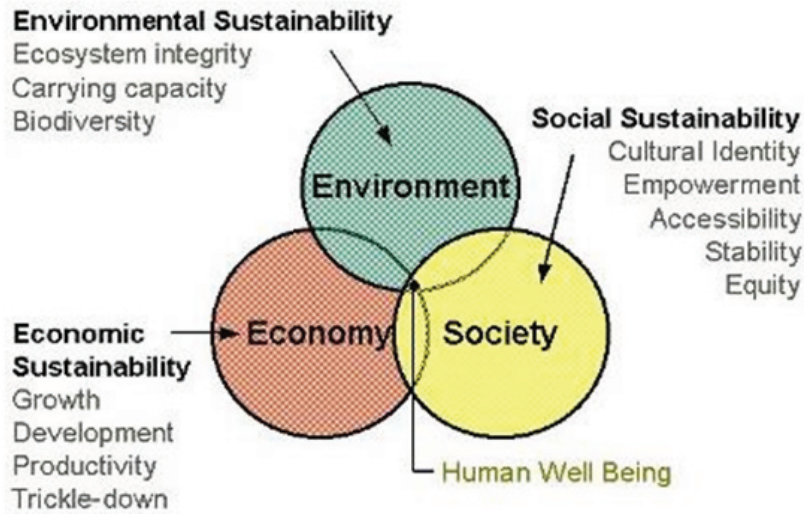


Figure 1: A diagram illustrates the main components of sustainability  
<http://www.arch.hku.hk/research/BEER/sustain.htm#1.3> By .Sam C M Hui. 2002

The goals of sustainable architecture along the three dimensions of sustainability are:

1. Efficiency in utilizing resources.
2. Efficiency in the use of energy
3. Preventing pollution
4. Compatibility with the environment.

Many architectural trends have put sustainability into consideration such as environmental architecture, vernacular architecture, conservation of historic buildings, and green architecture. The aim here is not to study each trend in detail but rather focus on the historic conservation and sustainability.

## 2. Conservation and sustainability

Heritage manifests human ingenuity and history. Heritage buildings cannot be reconstituted once they have been destroyed. Heritage management is an ongoing and dynamic process that balances conservation and change.<sup>5</sup> Unfortunately, when it comes to “sustainability”, heritage conservation has been ignored. Heritage conservation has a great potential to improve the quality of life, improve our understanding of the past and of ourselves and contribute to our culture.<sup>6</sup> The concept of sustainability, which emerged in 1972,<sup>7</sup> is always associated with new buildings.

Conservation and sustainability share the same generative basics. The first and basic concept of sustainability is to use what already exists. Similarly, the



basic concept of conservation is to protect what we already have. As a result, from the conceptual point of view, there is neither conflict nor contradiction between conservation and sustainability.

Some conservationists, e.g., Sir Bernard Feilden, stated that sustainability is about prolonging the useful life of a building in order to contribute to the saving of money and materials. Thus, conservation minimizes the use of finite resources of the natural world, and successfully embraces the three dimensions of sustainability.<sup>8</sup>

Conservation, as a tool for heritage management, is a key to sustainability. Heritage conservation is concerned with passing to future generations cultural values expressed through heritage items. In this context, heritage management is a dynamic and ongoing process balancing conservation and change. Heritage conservation and management are contributing strongly to the goals of sustainable development. The principles of sustainable development have always been central to heritage conservation and management. Managing heritage assets to ensure that they can be enjoyed by all, including future generations, means putting sustainability into practice.<sup>9</sup>

The core concept of conservation is to maintain, preserve and protect both the tangible and intangible heritage. This resource is non-renewable and irreplaceable. A demolished building cannot be retrieved or recreated. This means that a part of history is permanently lost. A folkloric tradition or ritual is indispensable to the local culture. Therefore, heritage is perceived as a cultural resource that must be perceived in the same way as other non-renewable resources. From this basic notion, the core of conservation is to keep heritage protected and to hand it to future generations. Therefore, keeping historic buildings intact requires some sort of a sustainability process. According to the United Nations Educational, Scientific and Cultural Organization (UNESCO) “[heritage] is our legacy from the past, what we live with today, and what we pass on to future generations”.<sup>10</sup>

Heritage buildings can be viewed as sustainable buildings. The reason is that they apply the same principles of green buildings in terms of using local natural building materials, and that they consider environmental aspects, e.g., orientation and energy conservation.<sup>11</sup> The concept of conservation avoids the unnecessary use of finite resources such as materials and fossil fuels, as well as the generation of waste and pollution. Heritage conservation can be considered an integral part of sustainable development in terms of:<sup>12</sup>

1. The use of heritage buildings has environmental, social, and economic

benefits, which are the three dimensions of sustainability

2. The rehabilitation of heritage buildings reduces waste and conserves energy.
  - a. Initial energy required to process, manufacture and transport building materials and construct buildings
  - b. Energy required to maintain and repair the building
  - c. Operating energy to heat, cool, ventilate or light the building
  - d. Energy to demolish and dispose of the building

3. The social and cultural values of heritage buildings are non-renewable resources.

Heritage conservation can play an important role of sustainable urban development strategies of cities. Also, it can be included in strategies set for using renewable resources and savings of energy.<sup>13</sup> Cultural heritage can also have the value to the well-being and quality of life to communities and can help prevent cultural globalization sustain cultural diversity and positively affect economic development.<sup>14</sup>

### **3 Past experiences**

The city of Yangzhou, located in the central part of Jiangsu Province in China, is the pilot for the implementation of the Eco City Planning and Management Programme (a cooperation designed to achieve sustainable development through creative and inventive use and management of local resources). The Eco City Planning and Management Programme introduce the concept of “Sustainable Urban Conservation” to improve the living conditions of residents in traditional urban neighborhoods by upgrading these areas and supporting self-help initiatives. The applied sustainable urban conservation strategies are characterized by:

1. Process - rather than project - oriented focus;
2. Harmonious development that takes careful consideration of the needs of local residents;
3. Long-term sustainable perspective, which combines social (residents), economic (small-scale local enterprises), cultural (conservation), and ecological (resource-consciousness) aspects;
4. Improvement in living conditions through pro-active and supportive programmes;





5. Improvement in the economic situation of local residents;
6. Extensive participation of stakeholders including local communities;

As the Old City is upgraded, its residents and the people of Yangzhou at large benefit from the programme. It becomes attractive for tourism and an opportunity for the improvement of the local economy in the Old City and in Yangzhou itself.<sup>15</sup> (Figure 2)



Figure 2: The old city of Yangzhou

#### 4. The Ottoman Town of Alexandria

The Ottoman Town is the oldest part of the City of Alexandria. When the city was founded by Alexander the Great in 331 BCE, Alexandria consisted of a small village called Rakouda on the mainland and, at a distance, a small island called the Pharos. Later, the two parts were connected by a bridge called the heptastadium. Overtime, silt accumulated on both sides of the bridge, eventually, connecting the mainland to the island, shaping the Eastern Harbor and the Western Harbor. Both harbors enclose a piece of land in between them that was later called “The Ottoman Town” with reference to the Ottoman Sultan Selim I who conquered Egypt in 1517. The Ottoman Town grew to occupy the whole of the isthmus north of the medieval city and it became the main center of the city with fishermen’s housing, mosques, a commercial area and the port. Later, Mohamed Ali, the Vice Roy of Egypt, transformed the city by 1820 through the establishment a new European city just to the south of the Ottoman Town. The European city was laid out following western planning schemes, with avenues lined up with trees; rectangular blocks and grand squares like Mansheya square making the city appear more like a European city than a traditional Islamic one.<sup>16</sup>

Today, the Ottoman Town suffers from the rapid increase in population, rising land values and prices, and the replacement of old houses by high-rise apartments. The original urban character of the district is gradually being lost and disfigured.

#### **4. 1. Urban character and architectural style**

The planning of the Ottoman Town reflects the traditional planning schemes of Arab cities in terms of densely built forms and narrow alleyways and streets. On the other hand, the architectural style of the Ottoman Town is a representation of the mix of traditional Islamic architecture and classical influences that are inspired by the nearby European cities, forming what is known as the Ottoman style around the 18<sup>th</sup> century.<sup>17</sup> Buildings have a limited height and are usually 2 or 3 stories. Narrow openings are screened with shutters that provide privacy and protection against the sun and are provided with exposed lintels made out of wood. Unfortunately, due to the rapid rate of development and modernization movements in the 19<sup>th</sup> century, very little houses remain that date back to the Ottoman period. Most of the houses in the Ottoman Town date to the middle to late 19<sup>th</sup> century.

The Ottoman Town has two distinctive qualities:

- 1- The environmental and physical capital that is represented by its buildings, urban fabric and landmarks
- 2- The socio-cultural values that are represented by architecture, traditions, customs and local rituals and other aspects of intangible heritage.

#### **4.2. Analysis of the Ottoman Town with respect to planning and architectural sustainability**

As explained in the theoretical part of the research historic buildings apply the basic concepts of a sustainable architecture. Historic buildings are well connected with their surrounding, they respond to the social, cultural, economic, technical and environmental contexts. This part analyzes the Ottoman Town buildings with respect to their sustainability.

##### **4. 2. 1. Planning scheme and urban setting**

Historic districts are composed of dense urban fabric. The building pattern is tight and compact, spaces are minimal and streets are narrow. Aside from



climatic and environmental considerations, in terms of shading and protecting facades against the sun, the compact planning scheme minimizes distances between several parts of the district. This results in low environmental footprint.<sup>18</sup> (Figures 3 and 4).



Figure 3: Ariel view of the Ottoman Town that illustrates the compact urban form



Figure 4: A typical street of the Ottoman Town

#### **4. 2. 2. Building materials and construction techniques**

Traditional buildings of the Ottoman Town are always built with local materials. These materials are reusable and are not created by an industrialized



process. Therefore, they are produced without using energy except for the energy used to cut and transfer these materials. Stones, bricks, wood and tiles are the key building materials. The structure system consists of load-bearing walls with wooden beams along the short span perpendicular to the main façade. Beams are covered with wooden planks, cement mortar or plain concrete. First floors are cantilevered and project about 0.6 - 0.8 meters off the main plane of the façade. They are supported by wooden cantilevers that extend from the ceiling planks and are further enforced by diagonal supports. Building height ranges between two and three stories. These building materials are reusable, recyclable and environment friendly and biodegradable as well. (Figures 5, 6, 7, and 8).



Figure 5: Typical house of the Ottoman Town. The second floor overhangs to the street, supported by diagonal wooden bracings. Openings are screened to control light and provide privacy

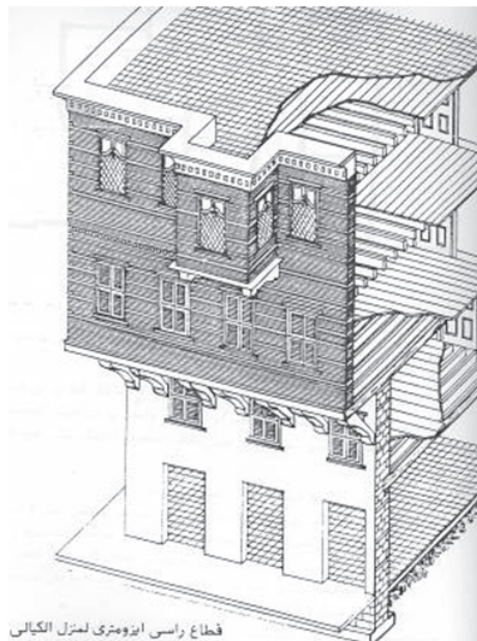


Figure 6: Three dimensional section of the Kayali house illustrating the building materials and structural system<sup>19</sup>





Figure 7: External view of the Kayali house



Figure 8: Interior of the Terbana, Mosque illustrating the reuse of classical columns transferred from the old temples of the classical Alexandria



## 5. Social, environmental and economical sustainability in Ottoman Town

### 5. 1. Social sustainability

The dense urban fabric of the Ottoman Town results in a strong social coherence of the residents of the district. Human relationships are more intimate and friendly. Multi-families share the same house composing what is termed a family house, where the entire family lives in the same building where each family occupies a single floor. This is also called an extended family house. This organization scheme celebrates social sustainability between families, neighbors and residents of the old districts. Moreover, if these districts are conserved, they would provide a unique living experience to residents and a distinctive tourist experiences and subsequently build civic pride and enhance the sense of place belonging. The following plans of a typical house illustrate the concept of family house. (Figure 9). The ground floor consists of shops while the upper floors are reserved for the family. Houses used to be identified by the names of the families that live in them, e.g., the Kayali House, the Rateb House, etc.



Figure 9: Plans of the Kayali House illustrates the internal configuration and the concept of extended family house, where each floor was occupied by a sub family of the original family<sup>20</sup>



## 5. 2 Environmental sustainability

Traditional buildings of the Ottoman Town and specifically houses are geographically oriented to be environmentally responsive to wind, local breeze, sun direction and other micro climate considerations. The aim is to provide climatic comfort for residents. Thick walls retard heat transfer from outside to inside. The narrow streets, which feel even narrower by overhanging upper stories supported by wooden beams, provide shade and protection from the sun for pedestrians. Some houses have an inner courtyard surrounded by rooms. The inner courtyard creates a micro climate that is different from the outside environment. The courtyard has a social role in terms of privacy as it is used as living space and family activities. Carefully-placed screened openings and windows respond to the surrounding environment and control airflow and light. (Figures 10 and 11).



Figure 10: examples of the inner courtyards of traditional houses of the Ottoman Town



Figure 11: Placement of windows and screened openings respond to the environmental aspects in terms of light and ventilation while at the same time provides an aesthetic expression



### 5.3. Economic sustainability

Builders of the Ottoman Town considered economic sustainability. Mosques such as the Shorbagui Mosque are called raised mosques, a type of mosque exclusive to Alexandria. (Figures 12 and 13). The praying area is raised above the ground street level, leaving the ground floor to be used as shops. The rental of these shops helps support the running cost and maintenance of the mosque. Moreover, major mosques, as Terbana and Shorbagui, are adjoined by a wekala, where the rent of the shops of the wekalas is used to support the running cost and maintenance of the mosque. This type of economic sustainability is always associated with many traditional historic districts in Alexandria, Cairo and other traditional districts in Arab cities.



Figure 12: Shorbagui Mosque. The ground floor is used as shops that are part of the street market while the praying area is raised to the upper floor. The entrance of the mosque is to the left.



Figure 13: Terbana Mosque. The ground floor is used as shops while the praying area is raised to the upper floor



## 6. Conclusions

Sustainability can serve as a tool to achieve heritage conservation and at the same time heritage conservation can serve as a tool to achieve sustainability. The basic concept of sustainability is to use what already exists and the basic concept of conservation is to protect what we already have. The two concepts can support and enforce each other. On the other side, heritage conservation should be an important part of sustainable urban development strategies of cities. The case of Yangzhou China is a good example. The traditional architecture of the Ottoman Town in Alexandria, Egypt illustrates many aspects of sustainable architecture. It responds to the surrounding environment and socio-economic circumstances effectively. A lesson can be learned from traditional architecture and can further be applied to contemporary architecture in the Arab world. These lessons includes the use of local and natural building materials that are reusable, recyclable, biodegradable and uses less energy to be produced and are safe to dispose. Also, buildings should be responsive to the social and traditional aspects of the society in terms of being extendable and of providing privacy. Other lessons to be learned are to be responsive to the surrounding environment and climatic conditions in terms of using massive walls, less openings and building orientation. The research presents an initiative attempt to study of the Ottoman Town in the light of the three dimensions of sustainability, namely social, environmental and economical. Most of the previous research and studies about the Ottoman Town in Alexandria focused on the planning and the architectural aspects. Finally, historic buildings and districts should be conserved as they present part of our cultural heritage, and they should be handed intact to future generations.

## Endnotes:

- 1 [www.arch.hku.hk/research/sustain.htm](http://www.arch.hku.hk/research/sustain.htm), Hong Kong University website.
- 2 Burntland, G.(ed.), *Our Common Future*, World Commission on Environmental and Development. Oxford, Oxford University Press, 1987.
- 3 [www.arch.hku.hk/research/BEER/sustain](http://www.arch.hku.hk/research/BEER/sustain), Hong Kong University, by Sam C M Hui. 2002
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- 15 Cities Alliance Profile: Sustainable Urban Conservation of the Old City of Yangzhou, China [www.citiesalliance.org/yangzhou/eco](http://www.citiesalliance.org/yangzhou/eco).
- 16 Aref , Yasser (2007) "Informal Housing. The Case of the Ottoman Town, Alexandria, Egypt", 1<sup>ST</sup> International symposium, Scenarios of illegal dwelling, Strategies of building and town recovery, edited by Rosa Maria Vitrano, Agrigento, Italy, p.172
- 17 Abraham, Mohsen (1994) "Guidelines to Upgrade Deteriorated Historical Zones. Case study: El Gomrok District, Turkish Town - Alexandria", Msc Thesis, Alexandria University, Faculty of Engineering, p. 96.
- 18 Ecological footprint is defined as the area of land required in order to sustain the activities of a city or a building includes that for cultivation of food mining of resources and absorption of waste.
- 19 Masood, Osama (1985) "Revitalization of Old Regions in Egypt – District of El Gommrok", Msc Thesis, Alexandria University, Faculty of Engineering, p. unmarked.
- 20 Masood, Osama (1985) "Revitalization of Old Regions In Egypt – District of El Gommrok", Msc Thesis, Alexandria University, Faculty of Engineering, p. unmarked.

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## الحفاظ على التراث كوسيلة لتحقيق الاستدامة

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#### ملخص

تعتبر قضية تحقيق الاستدامة احد اهم الاهتمامات التي تواجه العالم اليوم. يوجد الكثير من القلق من استخدام المصادر والموارد الغير قابلة للتجديد نتيجة لزيادة عدد السكان في العالم وارتفاع مستوى المعيشة في اغلب الدول المتقدمة وبعض من الدول النامية مما ادى الى ارتفاع معدل استهلاك الموارد الغير قابلة للتجديد بصورة كبيرة خلال العدة عقود السابقة. الاستخدام الحكيم لتلك الموارد، واعادة التدوير واعادة استخدام المواد اصبح ضرورة ملحة. إن صناعة البناء والتشييد ومجال العمارة بالتحديد لا يجب ان يستثنى من هذا الاتجاه. خلال العقود الماضية أدرك العديد من المماريين أهمية ما يمكن ان تحققه العمارة من تحقيق الاستدامة وتقليل استهلاك المصادر والموارد الغير قابلة للتجديد. هدف هذا البحث دراسة الفرص التي تتحقق من التكامل بين الحفاظ على التراث المعماري والاستدامة. تناقش الورقة البحثية العلاقة المتبادلة بين الحفاظ على التراث المعماري والاستدامة والمواضيع المرتبطة بكلا منهم وتطبيقاتها ثم يتم دراسة حالة مباني المدينة العثمانية بالاسكندرية.

